



**Report Prepared for the
Texas Secretary of State
Elections Division**



**Voting System Certification
Evaluation Report**

**Election Systems and Software (ESS)
Unity 3.4.1.4 Voting System**

Introduction

This report summarizes the findings and observations regarding the conformance of the Election Systems and Software (ESS) Unity 3.4.1.4 voting system to the requirements of the State of Texas.

Pursuant to Texas Administrative Code §81.60, ESS submitted their application for state certification. Included with their application was their Technical Data Package (TDP) and their test report, upon which the EAC based their national certification. The EAC/NIST NVLAP accredited Voting System Test Laboratory (VSTL) was NTS, formerly Wyle Labs. The EAC certification of this system was to the 2002 version of the Voluntary Voting System Guidelines (VVSG) and not the newer 2005 version. Under EAC rules modifications to previously certified voting systems may be certified to the older version of the VVSG but the modifications themselves are required to meet the newer requirements of the 2005 standard. Accordingly, the majority of this system was evaluated to the 2002 version, see Appendix A - EAC Certificate of Certification, but modifications were evaluated to the 2005 version of the VVSG.

To provide chain-of-custody, a copy of all firmware/software and source code was sent directly from NTS. It was installed in the early part of the examination under the supervision of the Texas examination team.

The ESS Unity 3.4.1.4 Voting System is a modification of the ESS Unity 3.4.1.0 Voting System. The ESS Unity 3.4.1.0 Voting System was certified for use in the state of Texas on September 2, 2014.

The ESS Unity 3.4.1.4 Voting System was evaluated for certification by the State of Texas on April 18-20, 2017.

Recommendation

The ESS Unity 3.4.1.4 Voting System is recommended for certification, with observations and comments presented in this report. The system was judged to comply with the voting system requirements of the State of Texas.

This recommendation is being made with the observation that many system components are identical to those approved in the prior ESS Unity 3.4.1.0 system. That and other prior versions

of the system are being successfully used to run elections, including in Texas. The features introduced in this version primarily facilitate jurisdictions with older versions of the Unity system to integrate in this version and use the two together in an election.

Further, Unity version 3.4.1.0 of the system has been deployed and is being used successfully in other states. The EAC maintains an interactive map identifying jurisdictions that are using EAC certified systems. They also maintain a report database of problems reported by election officials with certified systems. These resources were consulted and are the basis for the statement that this system, but more widely, its immediate predecessor, the Unity 3.4.0.0, is being used in a number of jurisdictions.

Remedial Actions Continued from Unity 3.4.1.0

The following remedial actions identified in the examination of the Unity 3.4.1.0 system are unchanged in the Unity 3.4.1.4 system and therefore continue to be recommended:

Documentation of Audit Logs

As noted it was found that the process for gathering the full set of log files is not clear. Further the messages vary across the system components with cryptic or sometimes absent explanation of the meaning of the message or the action that should be taken. For a large percentage, the only action recommended is to call the companies service representative. It is recommended that ESS be asked to provide a clear process for gathering a full set of system log files and clear explanations for understanding them. For errors and abnormal events both the meaning of the message and the correct action to be taken should be clear.

A further problem is that in contrast to the treatment of the iVotronic DRE in Unity 3.0.1.1 the Unity 3.4.1.0 makes analysis of the audit logs so labor intensive as to be prohibitive. In the Unity 3.0.1.1 system all iVotronic logs are gathered along with their vote tallies and a composite output of all the logs can be provided. This allows for quick and automatic scanning of the full set of audit log files to see if any of the units reported errors or abnormal events. In contrast the M100 and DS200 only provide a printout of their logs. These units are used in large numbers in some jurisdictions. Like any mechanical or electrical device, some units will have problems. The inability to have the logs electronically for timely review and appropriate remediation of problems is a major deficiency to election administration.

Lack of continuous feed real time audit logging

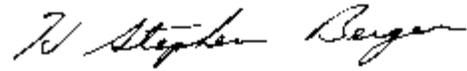
The M100 and DS200 do not support a continuous feed printer for real time audit logs and therefore should not be used in early voting or in a central count function.

Mark recognition thresholds

The ballot mark acceptance and rejection thresholds of the scanners in the system is not documented. Further those thresholds are determined by the vendor and they are different for each scanner. The mark acceptance and rejection thresholds should be clearly known by election officials. Further testing of marks near those thresholds should be performed to verify the consistency of each scanner to recognize ballot marks that irregular in some way. This

information is important if election officials are to accurately count irregular marks in a close election or recount.

Sincerely,

A handwritten signature in black ink that reads "H. Stephen Berger". The signature is written in a cursive style with a large, stylized initial "H".

H. Stephen Berger

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Candidate System

This section describes the candidate system, the ESS Unity 3.4.1.4 Voting System. The HPM and ERM are the only components which are changed from the ESS Unity 3.4.1.0 Voting System.

System Components

The system is comprised of the components listed in Table 1 and shown functionally in Figure 1. This information is based on companies “Application for Texas Certification of Voting System” (Form 100) and confirmed in the EAC .information attached to its certificate of certification for the system.

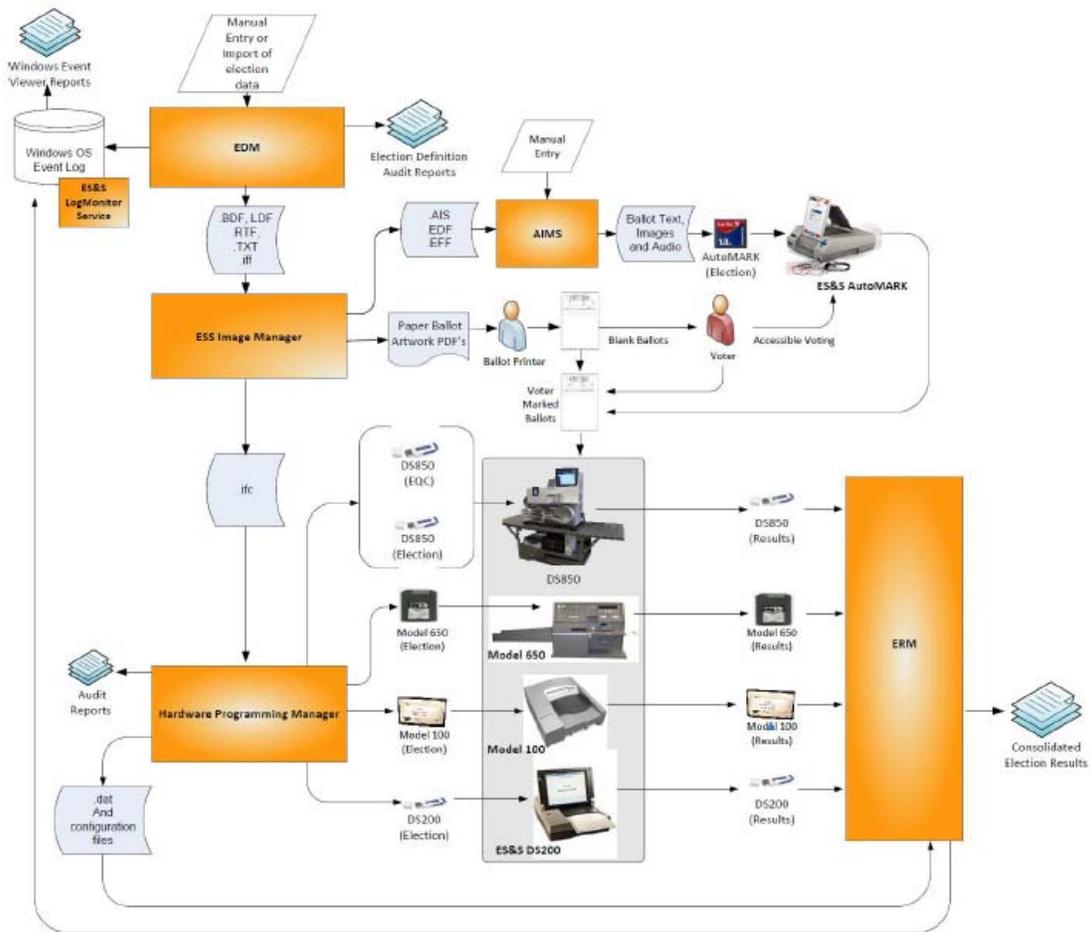


Figure 1 - ESS Unity 3.4.1.4 Process Flow

Table 1 - ESS Unity 3.4.1.4 System Components

System Components			
#	Unit/Application	Version	Function
1	Unity	3.4.1.4	Election Management System
Election Management Software			
2	Audit Manager	7.5.2.0	Provides password security and a real-time audit log of user inputs and system outputs for Election Data Manager and Ballot Image Manager.
3	Election Data Manager (EDM)	7.8.2.0	Defines precinct, contest and candidate data and generates the election database.
4	Election Reporting Manager (ERM)	7.9.0.1	Results consolidation and reporting software.
5	ESS Image Manager (ESSIM)	7.7.2.0	Formats paper ballots and output files for programming ballot marking devices (BMD).
6	Hardware Programming Manager (HPM)	5.9.0.1	Generates election definition media for voting system equipment.
7	Log Monitor Service	1.1.0.0	Monitors Windows Event Viewer and closes any active Election Management System (EMS) program if the system detects the improper deactivation of the Windows Event Viewer.
AutoMark			
8	AIMS	1.3.257	Generates equipment configurations for the AutoMARK Voter Assist Terminal (VAT).
9	AutoMARK	1.3.2907	Accessible ballot marking system that supports audio ballot playback and ballot marking for voters with low vision or with physical disabilities.
10	Voter Assist Terminal (VAT) Previewer	1.3.2907	Allows the user to preview audio text and screen layout prior to downloading election-day media.
Ballot Scanners			
11	M100	5.4.4.5	Precinct ballot tabulator used to process ballots at a polling place.
12	DS200	1.7.0.0	Precinct ballot tabulator used to process ballots at a polling place.
13	M650	2.2.2.0	Central ballot scanner for high-volume tabulation of mail ballots, absentee ballots or Election Day ballots.
14	DS850	2.9.0.0	Central ballot scanner for high-volume tabulation of mail ballots, absentee ballots or Election Day ballots.

Components Not Previously Certified

The following components have not previously been certified in Texas:

System Components			
#	Unit/Application	Version	Function
1	Election Reporting Manager (ERM)	7.9.0.1	Report generator
2	Hardware Programming Manager (HPM)	5.9.0.1	Election media preparation

As noted in the evaluation report of the ESS Unity 3.4.1.0 system, that system does not support a DRE but ESS stated that those counties that used their DRE could run the Unity 3.0.1.1 and Unity 3.4.1.0 in parallel and merge the results. The primary purpose of the ESS Unity 3.4.1.4 system was to modify the ERM and HPM to support merging of results and have that function certified.

The system being examine allows two-way bridging of election data between a Unity 3.0.X.X and 3.4.X.X system. This is accomplished through a runtime option that creates IFC files and then accepts RCY files that both systems are able to use, Figure 2.

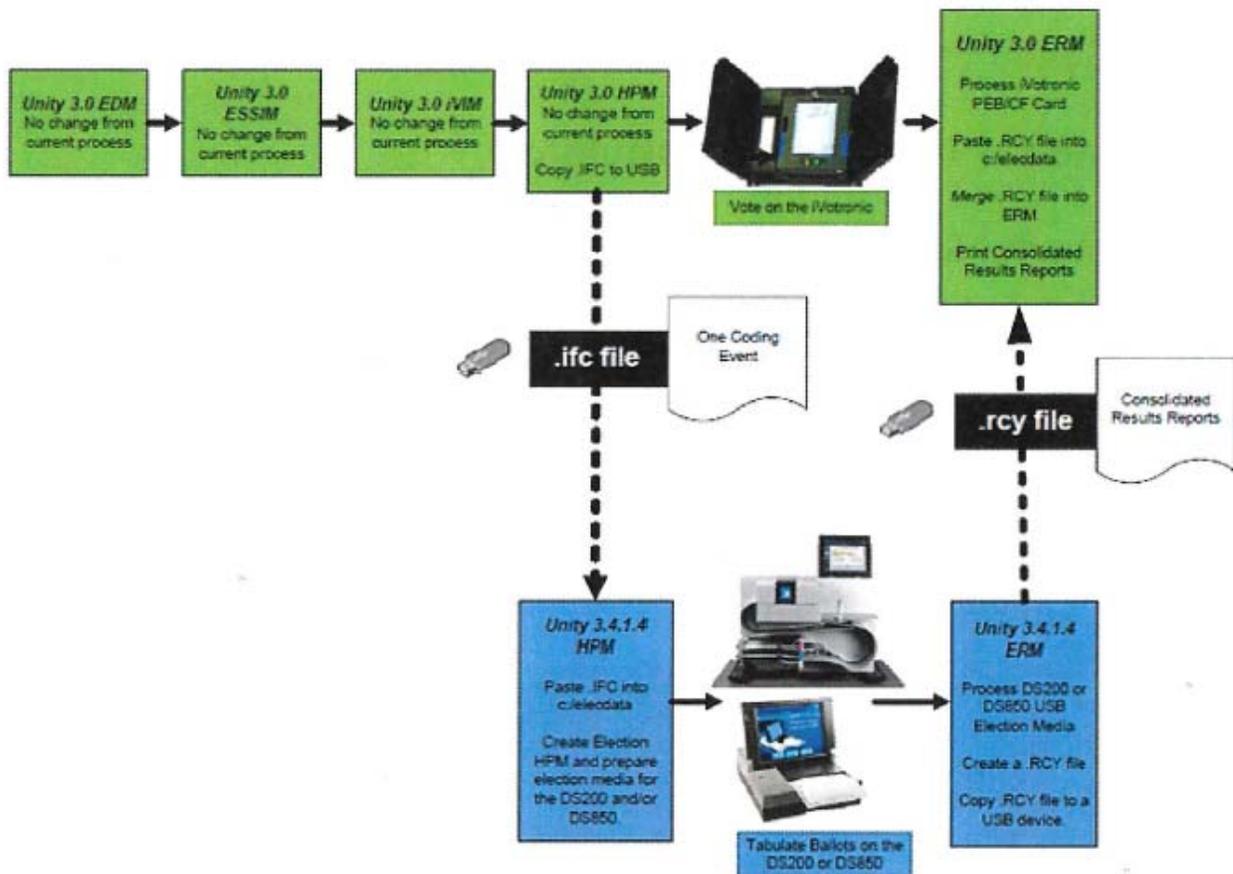


Figure 2 – Transfer of election files between Unity 3.0.1.1 and 3.4.1.4

The new functionality, shown in Figure 2 as a process flow diagram, allows one coding event to prepare media for both systems. Results can be moved between systems, allowing unified tabulation of the election results.

Comparison to Prior and Successor Systems

The prior ESS voting system certified in Texas was the Unity 3.4.1.0, certified on September 2, 2014.

Comparison to Previous Version				
#	Unit/Application	3.0.1.1 Version	3.4.1.0 Version	3.4.1.4 Version
1	Unity	3.0.1.1	3.4.1.0	3.4.1.4
Election Management Software				
2	Election Data Manager (EDM)	7.4.4.0	7.8.2.0	7.8.2.0
3	Election Reporting Manager (ERM)	7.1.2.1	7.9.0.0	7.9.0.1
4	ESS Image Manager (ESSIM)	7.4.2.0	7.7.2.0	7.7.2.0
5	Hardware Programming Manager (HPM)	5.2.4.0	5.9.0.0	5.9.0.1
6	Audit Manager (AM)	7.3.0.0	7.5.2.0	7.5.2.0
7	Log Monitor Service		1.1.0.0	1.1.0.0
8	VAT Previewer		1.3.2907	1.3.2907
AutoMark				
9	AutoMARK	1.1.2258	1.3.2907	1.3.2907
10	AIMS	1.2.18	1.3.257	1.3.257
Ballot Scanners				
11	M100	5.2.1.0	5.4.4.5	5.4.4.5
12	M650	2.1.0.0	2.2.2.0	2.2.2.0
13	DS200		1.7.0.0	1.7.0.0
14	DS850		2.9.0.0	2.9.0.0

ESS has received EAC national certification for several successor systems using its new election management system, EVS, replacing the Unity system, used in the current system being examined.

Successor Voting Systems		
#	System	Date of EAC Certification
1	EVS 5.0.0.0	May 16, 2013
2	EVS 5.0.1.0	March 18, 2014
3	EVS 5.2.0.0	July 2, 2014
4	EVS 5.2.1.0	December 18, 2015
5	EVS 5.2.2.0	February 27, 2017
6	EVS 5.4.0.0	February 24, 2017

Many components are common to the version of the system previously certified in Texas. Accordingly, it may be assumed that the experience using the prior version of the system will be similar to that of the new system.

Examination Report

Description of the Examination

The examination occurred on April 18-20, 2017. It was preceded by the delivery of the companies Forms 100 and 101, Technical Data Package, authorization letters and related documents. The system software and firmware was provided directly from the VSTL that had examined the system to the VVSG for national certification.

On the first day of the examination, the technical examiners (Stephen Berger, Tom Watson and James Sneeringer), Christina Adkins and some members of the election division staff were present to observe and verify the installation of the vendor's software. Digital signatures were recorded of the software provided by NTS and the software and firmware was installed onto the system. Photos of the equipment and labels were taken. Where hardware and firmware versions could be provided either on a screen or printed, those were produced and recorded.

Members of the Secretary of State staff tested the AUTOMARK Voter Assist Terminal ("AutoMARK") for compliance with state and federal accessibility guidelines.

The ESS staff reviewed the Unity 3.4.1.4, including its configuration and the function and role of the various components in the voting system. An overview of the changes from the last version certified in Texas, the Unity 3.4.1.4, provided.

The examiners tested each piece of equipment using a pre-marked "test deck" of ballots. The test deck had been hand tallied by staff from the Secretary of State's office on ballots provided by the vendor. Because they were unchanged from the previous examination of the Unity 3.4.1.0 voting system, the M100 and DS650 were not reexamined during this exam.

Voted ballots were tabulated through the DS200 (precinct ballot counter) and DS850 (central tabulator). The tabulation reports from the DS200 and DS850 all matched and were correct.

The conclusion of the exam was that the Unity 3.4.1.4 meet the Voting System Standards outlined in Sections 122.001, 122.032, 122.033, and 122.0331 of the Texas Election Code and the rules outlined in Chapter 81, Subchapter C of the Texas Administrative Code.

Observations & Findings

DRE Support

The system does not include the iVotronic, ESS's DRE and so it was not included in this exam. However, results from the Unity 3.0.1.1, which does support the iVotronic, can be merged with the results of the Unity 3.4.1.4, which would be required if that jurisdiction had acquired the DS200, DS850 or updated other components to the 3.4.1.4 level.

Continuous feed printer for real time audit logs

As with the examination of the Unity 3.4.1.0, it was observed that the M100 and DS200 do not provide a continuous feed printer for real time audit log. Texas Administrative Code §81.62 requires that any central accumulator must have a continuous feed printer dedicated to a real-time audit log. Since, neither the M100 nor the DS200 support this requirement they should not be used for early voting or as central tabulators.

Mark recognition and mark rejection thresholds

Ballot scanners have thresholds to differentiate a valid mark from a stray mark or smudge. Further, the ballot scanners in the Unity 3.4.1.4 system were developed at different times and all use different technologies for detecting marks. For large, well marked selections all the scanners are likely to detect them the same way. The majority of testing by the VSTL is done with dark marks that completely fill the selection oval. However, for marks that approach the scanner's threshold there is the possibility that the same mark may be read differently by different scanners, even in the same voting system.

In a study of ballot marks made in real elections on mail-in ballots a wide distribution of marks was found, Table 2. In a close election, the accurate reading of the marks that are smaller, lighter or otherwise irregular becomes increasingly important.

Table 2 – Distribution of Ballot Marks

Ballots Mark Distribution					
Instrument	Pen				Pencil
Color	Black	Blue	Red	Green	Grey
Contrast	Dark	Dark	Dark	Dark	Dark
% Fill					
> 75%	24207	7387	25	3	7435
50 - 75%	7860	661	0	0	718
25 - 50%	287	89	0	0	81
15 - 25%	10	0	0	0	20
10 - 15%	24	0	0	0	0
5 - 10%	10	0	0	0	1
< 5%	5	0	0	0	0
Contrast	Light	Light	Light	Light	Light
% Fill					
> 75%	0	12	0	0	186
50 - 75%	0	0	0	0	107
25 - 50%	0	0	0	0	56
15 - 25%	0	0	0	0	15
10 - 15%	0	0	0	0	8
5 - 10%	0	0	0	0	10
< 5%	0	0	0	0	2

It is important that election officials know what the threshold of their ballot scanners are and what kinds of marks may read inconsistently because they are close to the threshold of the scanner. In the Unity 3.4.1.4 system there are four different thresholds for determining that is a valid mark and four different thresholds for determining what is a smudge or stray mark and should be ignored. However, these thresholds are not documented in the TDP. Further when asked the answer given by the company is very difficult to relate so that a mark that is close to the threshold can be identified.

A particular problem with the DS200 and DS850 is that it performs a bitonal conversion on scanned marks before trying to recognize them. A bitonal conversion takes the electronic image of a mark and converts all pixels to either pure black or pure white. The problem with performing the bitonal conversion before trying to recognize a mark is that a mark that is very

clear to the human eye may fall below the stray mark threshold and be ignored after the conversion, as shown in Figure 3

Ballot Mark Images		
#	JPG	After Conversion to Bi-Tonal
1		
2		
3		
4		
5		
6		
7		
8		
9		

Figure 3 – Some marks go through the bitonal conversion better than others

To deal with close elections election officials need to know what kinds of marks their scanners will have problems with and then have procedures for giving ballots with those kinds of marks special handling. However, to do that the mark recognition and mark rejection thresholds must be known and known in a way that an election official can identify a mark that may be problematic and deal with it appropriately.

Compliance Checklist

The following checklist includes all Texas voting system requirements. The complete checklist is provided as detailed support for the conclusion and recommendation of this report.

Vendor: Election Systems & Software	Voting System: 3.4.1.4	
Pre-Test Requirements		
• Is Form 100 complete and satisfactory?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• Review Form 100 - Schedule A - Have recommendations/issues made from previous exams been corrected or addressed?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• Review Form 101 - Are responses satisfactory?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• Review change logs and provide information for testing or questioning vendor	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• Training manuals appear complete?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
• Training manuals appear to be easy to use? <ul style="list-style-type: none"> • In several areas the user manuals were found difficult to use, notably regarding instructions on how to gather the full set of system audit logs, the meaning of the messages in those logs and the appropriate actions in response to any errors or unexpected events. 	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
• Check with other jurisdictions where system is in use and ask questions regarding system, support and training. <ul style="list-style-type: none"> • No information from other jurisdictions was used in this exam. 	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
• Did the system receive favorable reviews? <ul style="list-style-type: none"> • No reviews of this system were available for this exam. 	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
• Do all configurations listed in application seem feasible? Keep this in mind during the examination to make sure components necessary to ensure the security are included in all configurations and that the configurations will meet the counties needs (scanner used as central and/or precinct, etc..)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• Vendors' proposals shall state a clear, unequivocal commitment that the election management and voter tabulation software user's application password is separate from and in addition to any other operating system password.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• Vendor's system shall support automated application password expiration at intervals specified by a central system administrator.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• Vendor shall discuss the steps required by the system administrator to implement and maintain automated password expiration. This discussion will include narrative concerning the degree to which the application password expiration capabilities are based on (a) the server or client's operating system, (b) the software application, or (c) both	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• The vendor's proposal shall state the name of any automated incident, issue, or problem tracking system used by the firm in providing support to its election system clients.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Verify Installation		
• Verify/List all hardware	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• Verify/List all COTS hardware/software versions	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• Is the COTS hardware being demonstrated the same version as what was tested at the VSTL?	Yes	No

	<input checked="" type="checkbox"/>	<input type="checkbox"/>
• Is the COTS software being demonstrated the same version as what was tested at the VSTL?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
• Witness or actual install the software and firmware with the SOS CDs received from VSTL.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

Vendor: Election Systems & Software		Voting System: Unity 3.4.1.4	
Texas Law	Federal Law		
System Review			
TEC 122.001		• Preserves the secrecy of the ballot	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
TEC 122.001		• Is suitable for the purpose for which it is intended	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
TEC 122.001		• Operates safely, efficiently, and accurately and complies with the error rate standards of the voting system standards adopted by the EAC	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
TEC 122.001		• Is safe from fraudulent or unauthorized manipulation (physical exam and review of manuals)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
TEC 122.001		• Permits voting on all offices and measures to be voted on at the election	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
TEC 122.001	HAVA	• Warns of Overvote - Prevents counting votes on offices and measures on which the voter is not entitled to vote	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
	HAVA	• Warns of Undervote	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
TEC 122.001		• Prevents counting votes by the same voter for more than one candidate for the same office or, in elections in which a voter is entitled to vote for more than one candidate for the same office, prevents counting votes for more than the number of candidates for which the voter is entitled to vote	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
TEC 122.001		• Prevents counting a vote on the same office or measure more than once	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
TEC 122.001		• Permits write-in voting	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
TEC 122.001		• Is capable of permitting straight-party voting	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
TEC 65.007		• Is capable of cross-over votes	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
TEC 122.001	HAVA	• Is capable of providing records from which the operation of the voting system may be audited	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
		• Is it easy to choose the appropriate ballot style?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
		• Is the number of ballot styles available on a unit limited?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
		• Can you cancel the marking of a ballot after starting? Explain how.	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
		• Is there a way to properly secure all ports on the system?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
		• Are instructions provided in the documentation for securing the system?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
		• Usable for curbside voting?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
		• How to setup or modify audio files	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
		• How to adjust volume	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
		• Does the system have any RF (Radio Frequency) communications?	Yes <input type="checkbox"/> No <input type="checkbox"/>

	<ul style="list-style-type: none"> Parts of the TDP and other documentation mention use of modems with the system. It is not clear if this includes or does not include RF modems. It is also not clear how this functionality is disabled although use of such modems would take the system outside of the scope of this certification. 	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	<ul style="list-style-type: none"> Have representatives of the visually impaired community evaluated the accessibility of the system? 	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<ul style="list-style-type: none"> Test both early voting and election day - all functions opening/closing 	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<ul style="list-style-type: none"> Does system include sip 'n puff for accessibility 	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<ul style="list-style-type: none"> Does system include paddles for accessibility 	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Texas Real-time Audit Log Review			
TEC 81.62	<ul style="list-style-type: none"> A central tabulating device must include a continuous feed printer dedicated to a real-time audit log, which prints out all significant election events and their date and time stamps. <p>See VVSG 2005:</p> <p>2.2.5.2.1.d: "The audit record shall be active whenever the system is in an operating mode. This record shall be available at all times, though it need not be continually visible."</p> <p>2.2.5.2.1.g: "The system shall be capable of printing a copy of the audit record."</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 81.62	<ul style="list-style-type: none"> Log error messages and operator response to those messages <p>See VVSG 2005 Section 2.2.5.2.2.a & 4.4.3.d</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 81.62	<ul style="list-style-type: none"> Log the number of ballots read for a given precinct <p>See VVSG 2005 Section 4.4.4.a & c & e</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 81.62	<ul style="list-style-type: none"> Log completion of reading ballots for a given precinct <p>See VVSG 2005 Section 4.4.3.b.3</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 81.62	<ul style="list-style-type: none"> Log the identity of the input ports used for modem transfers from precincts <p>See VVSG 2005 Section 4.4.2.g.1-4</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 81.62	<ul style="list-style-type: none"> Log users logging in and out from election system <p>See VVSG 2005 4.4.3.a.4, 4.4.3.d, 6.5.5.a & c</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 81.62	<ul style="list-style-type: none"> Log precincts being zeroed <p>See VVSG 2005 4.4.3.b.2</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 81.62	<ul style="list-style-type: none"> Log reports being generated <p>See VVSG 2005 4.4.3.d</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 81.62	<ul style="list-style-type: none"> Log diagnostics of any type being run <p>See VVSG 2005 4.4.2.a & d</p>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<ul style="list-style-type: none"> Print any attempt to tally or load votes that have already been tallied or 	Yes	No

		counted, identifying the precinct or source of the votes and flagging it as a duplicate	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		• Print starting the tally software (e.g. from the operating system) or exiting the tally software, or any access to the operating system.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
		• Record if a printer is paused, turned off, turned on, disconnected, and when reconnected.	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Optical Scan System Review				
TEC 122.001		• Preserves the secrecy of the ballot	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 122.001		• Is suitable for the purpose for which it is intended	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 122.001		• Operates safely, efficiently, and accurately and complies with the error rate standards of the voting system standards adopted by the EAC	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 122.001		• Is safe from fraudulent or unauthorized manipulation (physical exam and review of manuals)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 122.001		• Permits voting on all offices and measures to be voted on at the election	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 122.001	HAVA	• Warns of Overvote - Prevents counting votes on offices and measures on which the voter is not entitled to vote	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	HAVA	• Warns of Undervote	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 122.001		• Prevents counting votes by the same voter for more than one candidate for the same office or, in elections in which a voter is entitled to vote for more than one candidate for the same office, prevents counting votes for more than the number of candidates for which the voter is entitled to vote	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 122.001		• Prevents counting a vote on the same office or measure more than once	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 122.001		• Permits write-in voting	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 122.001		• Is capable of permitting straight-party voting	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 65.007		• Is capable of cross-over votes	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 122.001	HAVA	• Is capable of providing records from which the operation of the voting system may be audited	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
		• Reports available by precinct?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
		• In order to perform a manual recount, can you print cast vote records for a precinct (including early voting, ED and absentee?) from an individual DRE?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
TEC 127.154		• Does each unit have a permanent identification number?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
		• Is there a way to properly secure all ports on the system?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
		• Are instructions provided in the documentation for securing the system?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>

Appendix A - EAC Certificate of Certification

	<p>United States Election Assistance Commission</p>	
<p>Certificate of Conformance</p>		
<p>ES&S Unity 3.4.1.4 Election Systems & Software</p>		
<p>The voting system identified on this certificate has been evaluated at an accredited voting system testing laboratory for conformance to the <i>2002 Voting System Standards (2002 VSS)</i>. Components evaluated for this certification are detailed in the attached Scope of Certification document. This certificate applies only to the specific version and release of the product in its evaluated configuration. The evaluation has been verified by the EAC in accordance with the provisions of the <i>EAC Voting System Testing and Certification Program Manual</i> and the conclusions of the testing laboratory in the test report are consistent with the evidence ad-duced. This certificate is not an endorsement of the product by any agency of the U.S. Government and no warranty of the product is either expressed or implied.</p>		
<p>Product Name: <u>Unity</u></p>		
<p>Model or Version: <u>Version 3.4.1.4</u></p>	<hr/>	
<p>Name of VSTL: <u>NTS</u></p>	<p><i>Executive Director</i> <i>U.S. Election Assistance Commission</i></p>	
<p>EAC Certification Number: <u>ESSUnity3414</u></p>	<p>Scope of Certification Attached</p>	
<p>Date Issued: <u>August 26, 2016</u></p>		

Appendix B - Digital Signatures of Software Examined

The installation media provide was provided by NTS for this exam. Digital signatures were taken both of the composite directories containing all files and directories and of the individual files, after they were unpacked. SHA-1 digital signatures of those directories files were recorded to confirm continuity of the software certified in this exam with that tested by NTS and certified by the EAC.

The composite digital signatures are reported in this report. The digital signatures of the individual files, after unpacking were retained in the records of this exam.

These signatures can be used to verify that the software used in the future is identical to that examined during this exam.

Signature of Directory

The digital signatures of the total directory delivered by NTS for this exam, containing 10 files and folders, were:

SHA-1 Hash: 2504CF5F853FA0F6BE18813FAA0834206B9DF9E9

SHA-256 Hash: A4CF90B8AD9D7DA11AF93B034A878F0AD798E51D4D4B608790A0EA8F3D406576

Directory Structure

The directory structure of the material delivered was:

```
\---Unity_3414
+---Installs
|   \---EMS 2016-07-07
|       \---Unity 3.4.1.4
|           \---ProductInstalls
|               \---CustomerInstalls
|                   +---ERM 7.9.0.1
|                       |   Setup.exe
|                       |
|                       \---HPM 5.9.0.1
|                           Setup.exe
|
\---SourceCode

\---EMS 2016-07-07

ERM_7.9.0.1d_Source.zip
HPM_5.9.0.1f_Source.zip
```

Signatures of Individual Files

File Name

SHA-1 & SHA 256 Signatures

ERM 7.9.0.1\Setup.exe

D09BBF690FA6D84E3D9EFDA484C247804498743F
28DB04D73D98F56F689516933F0711BB29BFA9E535E95619B150634F9C7FFB7E

HPM 5.9.0.1\Setup.exe

93B4C4BE677CCC1284D5650391881B276C20FE21
8365F2D451FE91B6B6CF23D16E54F24B0F25DA4A1F632434E37E3EB73E6E7E0F

ERM_7.9.0.1d_Source.zip

9BB21D8313E24AA89B6A440A8FCEBA3D50E02E38
DD2547028BA6C1F97CA07D0E568B540AA17633E834AC4610CEB35F0E7B4033B7

HPM_5.9.0.1f_Source.zip

610F56A1AECDD22B3D52408AEB18803FB12F67CC7
998B1B639E5FA65A4269916645151A6ACB2E1555F68061FA4B94D17E1E6D1289