



United States Election Assistance Commission



Certificate of Conformance

**Dominion Voting Systems
Democracy Suite 5.0-A**

The voting system identified on this certificate has been evaluated at an accredited voting system testing laboratory for conformance to the 2005 *Voluntary Voting System Guidelines (2005 VVSG)*. 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 EAC *Voting System Testing and Certification Program Manual* and the conclusions of the testing laboratory in the test report are consistent with the evidence adduced. 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.

Product Name: Democracy Suite

Model or Version: 5.0-A

Name of VSTL: Pro V&V

EAC Certification Number: DVS-DemSuite5.0-A

Date Issued: August 14, 2017

*Executive Director
U.S. Election Assistance Commission*

Scope of Certification Attached

Manufacturer: *Dominion Voting Systems*
System Name: *Democracy Suite 5.0-A*
Certificate: *DVS-DemSuite5.0-A*

Laboratory: *Pro V&V*
Standard: *VVSG 1.0 (2005)*
Date: *August 14, 2017*



Scope of Certification

This document describes the scope of the validation and certification of the system defined above. Any use, configuration changes, revision changes, additions or subtractions from the described system are not included in this evaluation.

Significance of EAC Certification

An EAC certification is an official recognition that a voting system (in a specific configuration or configurations) has been tested to and has met an identified set of Federal voting system standards. An EAC certification is **not**:

- An endorsement of a Manufacturer, voting system, or any of the system's components.
- A Federal warranty of the voting system or any of its components.
- A determination that a voting system, when fielded, will be operated in a manner that meets all HAVA requirements.
- A substitute for State or local certification and testing.
- A determination that the system is ready for use in an election.
- A determination that any particular component of a certified system is itself certified for use outside the certified configuration.

Representation of EAC Certification

Manufacturers may not represent or imply that a voting system is certified unless it has received a Certificate of Conformance for that system. Statements regarding EAC certification in brochures, on Web sites, on displays, and in advertising/sales literature must be made solely in reference to specific systems. Any action by a Manufacturer to suggest EAC endorsement of its product or organization is strictly prohibited and may result in a Manufacturer's suspension or other action pursuant to Federal civil and criminal law.

System Overview:

The Dominion Democracy Suite (D-Suite) 5.0-A Voting System is modified voting system configuration that introduces updated OpenSSL FIPS 140-2 validated cryptographic modules to the baseline Democracy Suite 5.0 voting system configuration. The full Dominion Democracy Suite 5.0 Voting System description can be found in the EAC Certificate of Conformance, dated February 8, 2017. The Dominion Democracy Suite 5.0-A Voting System includes updated OpenSSL FIPS 140-2 validated cryptographic modules to the software of the Election Management System (EMS), Adjudication (ADJ), ImageCast Central (ICC), ImageCast X (ICX), and ImageCast Precinct (ICP) components.

Anomalies and/or Additions addressed in Democracy Suite 5.0-A:

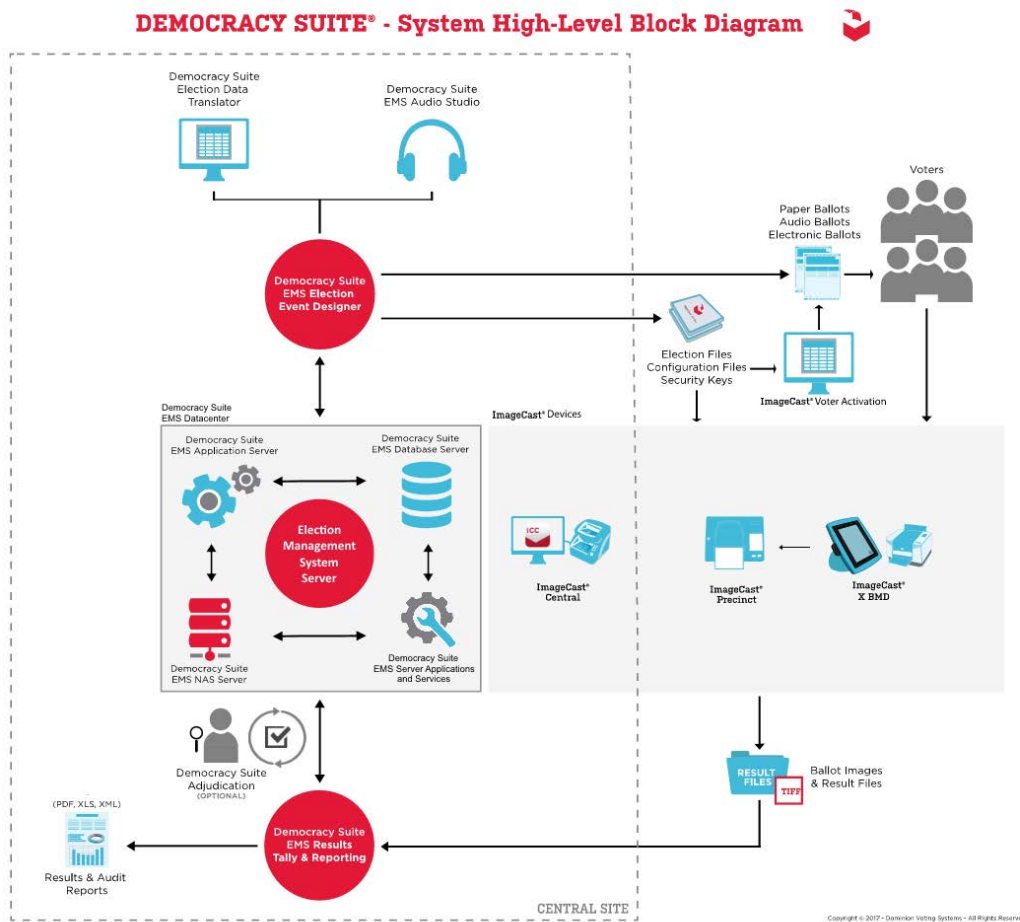
Testing of the Democracy Suite 5.0 voting system determined that the system and components used were not fully compliant to VVSG 1.0, Section 7 and RFI 2012-05. The deficiency was a result of the system using COT's software products in which the versions of the FIPS Certificates are no longer considered valid. A condition of certification for the Dominion Democracy Suite 5.0 voting system was that Dominion shall modify the system to bring it into compliance with the requirements of VVSG 1.0, Section 7 and RFI 2012-05.

The Democracy Suite 5.0-A voting system is a modification to directly address the deficiency identified and to comply with VVSG 1.0, Section 7 and RFI 2012-05, as required by the Scope of Certification for the Democracy Suite 5.0 voting system.

Language capability:

System supports Bengali, Chinese, English, French, Hindi, Japanese, Korean, Spanish, Thai.

Democracy Suite 5.0-A System Diagram



Components Included:

This section provides information describing the components and revision level of the primary components included in this Certification.

Voting System Software Components:

System Component	Software or Firmware Version	Operating System or COTS	Comments
EMS Election Event Designer (EED)	5.0.16.1	Windows 8.1 Pro	EMS
EMS Results Tally and Reporting (RTR)	5.0.16.1	Windows 8.1 Pro	EMS
EMS Application Server	5.0.16.1	Windows Server 2012 R2 Windows 8.1 Pro	EMS
EMS File System Service (FSS)	5.0.16.1	Window 8.1 Pro	EMS
EMS Audio Studio (AS)	5.0.16.1	Windows 8.1 Pro	EMS
EMS Data Center Manager (DCM)	5.0.16.1	Windows Server 2012 R2 Windows 8.1 Pro	EMS
EMS Election Data Translator (EDT)	5.0.16.1	Windows 8.1 Pro	EMS
ImageCast Voter Activation (ICVA)	5.0.16.1	Windows 8.1 Pro	EMS
EMS Adjudication (ADJ)	5.0.0.44402	Windows 8.1 Pro	EMS
EMS Adjudication Services	5.0.0.44402	Windows 8.1 Pro	EMS
EMS Election Device Management (EDM)	5.0.6366.25253	Windows Server 2012 R2 Windows 8.1 Pro	EMS
Smart Card Helper Service (SCHS)	5.0.6366.25253	Windows 8.1 Pro	EMS
Election Firmware	5.0.2-US	uClinux	ICP
Firmware Updater	5.0.2-US	uClinux	ICP
Firmware Extractor	5.0.2-US	uClinux	ICP
Kernel (uClinux)	5.0.2-US	Modified COTS	ICP
Boot Loader (COLILO)	20040221	Modified COTS	ICP
Asymmetric Key Generator	5.0.2-US	uClinux	ICP
Asymmetric Key Exchange Utility	5.0.2-US	uClinux	ICP
Firmware Extractor (Technician Key)	5.0.2-US	uClinux	ICP
ImageCast Central Application	5.0.2-0001	Windows 8.1 Pro	ICC
ICX Application	5.0-A.6366.2007	Android 5.0 (Samsung) Android 4.4 (Avalue)	ICX
ICX Security Certificate	N/A		ICX
ICX Security Certificate Password	N/A		ICX

Voting System Platform:

System Component	Version	Operating System or COTS	Comments
Microsoft Windows Server	2012 R2 Standard	Unmodified COTS	EMS Server SW Component
Microsoft Windows	8.1 Professional	Unmodified COTS	EMS Client/Server SW Component
.NET Framework	3.5	Unmodified COTS	EMS Client/Server SW Component
Microsoft Visual J#	2.0	Unmodified COTS	EMS Client/Server SW Component
Microsoft Visual C++ 2013 Redistributable	2013	Unmodified COTS	EMS Client/Server SW Component

System Component	Version	Operating System or COTS	Comments
Java Runtime Environment	7u76	Unmodified COTS	EMS Client/Server SW Component
Java Runtime Environment	8u77	Unmodified COTS	EMS Client/Server SW Component
Microsoft SQL Server 2012 Standard	2012 Standard	Unmodified COTS	EMS Client/Server SW Component
Microsoft SQL Server 2012 Service Pack 2	2012 SP2	Unmodified COTS	EMS Client/Server SW Component
Microsoft SQL Server 2012 SP2 Express with Advanced Services	2012 SP2	Unmodified COTS	EMS Client/Server SW Component
Cepstral Voices	6.2.3.801	Unmodified COTS	EMS Client/Server SW Component
Arial Narrow Fonts	N/A	Unmodified COTS	EMS Client/Server SW Component
Maxim iButton Driver	4.04	Unmodified COTS	EMS Client/Server SW Component
Adobe Reader DC	AcrobatDC	Unmodified COTS	EMS Client/Server SW Component
Microsoft Access Database Engine	2010	Unmodified COTS	EMS Client/Server SW Component
Open XML SDK 2.0 for Microsoft Office	2.0	Unmodified COTS	EMS Client/Server SW Component and Platform
Infragistics NetAdvantage Win Forms 2011.1	2011 Vol. 1	Unmodified COTS	EMS SW Platform
Infragistics NetAdvantage WPF 2012.1	2012 Vol. 1	Unmodified COTS	EMS SW Platform
TX Text Control Library for .NET	16.0	Unmodified COTS	EMS SW Platform
SOX	14.3.1	Unmodified COTS	EMS SW Platform
Log4net	1.2.10	Unmodified COTS	EMS SW Platform
NLog	1.0.0.505	Unmodified COTS	EMS SW Platform
iTextSharp	5.0.5.0	Unmodified COTS	EMS SW Platform
OpenSSL	1.0.2K	Unmodified COTS	EMS SW Platform
OpenSSL FIPS Object Module	2.0.10 (Cert 1747)	Unmodified COTS	EMS SW Platform
SQLite	1.0.65.0	Unmodified COTS	EMS SW Platform
Lame	3.99.4	Unmodified COTS	EMS SW Platform
Speex	1.0.4	Unmodified COTS	EMS SW Platform
Ghostsript	9.04	Unmodified COTS	EMS SW Platform
PdfToImage.dll	1.2	Unmodified COTS	EMS SW Platform
SharpSSH package	1.1.1.13	Unmodified COTS	EMS SW Platform
One Wire API for .NET	4.0.2.0	Unmodified COTS	EMS SW Platform
Avalon-framework-cvs-20020806	20020806	Unmodified COTS	EMS SW Platform
Batik	0.20-5	Unmodified COTS	EMS SW Platform

System Component	Version	Operating System or COTS	Comments
Fop	0.20-5	Unmodified COTS	EMS SW Platform
Microsoft Visual J# 2.0 Redistributable Package – Second Edition (x64)	2.0	Unmodified COTS	EMS SW Platform
Entity framework	4.3.1	Unmodified COTS	EMS SW Platform
Spreadsheetlight	3.4.3	Unmodified COTS	EMS SW Platform
Open XML SDK 2.0 for Microsoft Office	2.0.5022.0	Unmodified COTS	EMS SW Platform
Open SSL	1.0.2K	Unmodified COTS	ICP
OpenSSL FIPS Object Module	2.0.10 (Cert 1747)	Unmodified COTS	ICP
OpenSSL FIPS Object Module	2.0.10 (Cert 2473)	Unmodified COTS	ICX
PNG Reference Library	1.2.24	Unmodified COTS	ICP
Zlib	1.2.3	Unmodified COTS	ICP
ASP.NET AJAX Control Toolkit	15.1.4.0	Unmodified COTS	ICX incl. EDM
Entity Framework	6.1.3.net45	Unmodified COTS	ICX incl. EDM
Ionic Zip Library	1.9.1.8	Unmodified COTS	ICX incl. EDM
NLog Library	1.0.0.505	Unmodified COTS	ICX incl. EDM
SQLite	1.0.98.0	Unmodified COTS	ICX incl. EDM
Google Text-to-Speech Engine	3.8.16	Unmodified COTS	ICX incl. EDM
Zxing Barcode Scanner	4.7.5	Modified COTS	ICX SW
SoundTouch	1.9.2	Modified COTS	ICX SW
OpenSSL	1.0.2K	Unmodified COTS	ICC SW Build Library
OpenSSL FIPS Object Module	2.0.1.0 (Cert 1747)	Unmodified COTS	ICC SW Build Library
1-Wire Driver (x86)	4.04	Unmodified COTS	ICC Runtime SW
1-Wire Driver (x64)	4.04	Unmodified COTS	ICC Runtime SW
Kofax VRS	4.5 Build 269	Unmodified COTS	ICC Runtime SW
Kofax VRS Service Pack 1	4.5.1	Unmodified COTS	ICC Runtime SW
Canon DR-G1130 Driver	1.2 SP4	Unmodified COTS	ICC Runtime SW
Canon DR-G1130 Component Installer	4.50	Unmodified COTS	ICC Runtime SW
Visual C++ 2013 Redistributable (x86)	12.0.30501	Unmodified COTS	ICC Runtime SW

Hardware Components:

System Component	Hardware Version	Proprietary or COTS	Comments
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System Component	Hardware Version	Proprietary or COTS	Comments
ImageCast Precinct Optical Scanner	PCOS-320C	Proprietary	Available from Dominion Voting
ImageCast Precinct Optical Scanner	PCOS-320A	Proprietary	Available from Dominion Voting
ICP Ballot Box	BOX-330A	Proprietary	Available from Dominion Voting
ICX UPS Inline EMI Filter	1.0	Proprietary	Available from Dominion Voting
ICX Tablet	DVS Samsung (ICX-001)	Proprietary	Available from Dominion Voting
ICX Tablet	Avalue 15" Tablet (SID-15V)	COTS	
ICX Tablet	Avalue 21" Tablet (SID-21V)	COTS	
Server	Dell PowerEdge R630	COTS	
Client HW	Dell Precision T3420 PC	COTS	
Client HW	Dell Latitude E7450 Laptop	COTS	
ICX Printer	HP LaserJet Pro Printer M402dn	COTS	
ICC Workstation HW	Dell OptiPlex 7440 All in One	COTS	
ICC Workstation HW	Dell OptiPlex 9030 All In One	COTS	
ICC Scanner	Canon imageFormula DR-G1130	COTS	
Monitor	Dell Ultrasharp 24" Monitor U2414H	COTS	
Monitor	Dell Monitor KM632	COTS	
Monitor	Dell Monitor P2414Hb	COTS	
Printer	Brother Laser Printer HL-L2300D	COTS	
CD/DVD Reader	Dell DVD Multi Recorder	COTS	
iButton Programmer	Maxim iButton Programmer DS9490P# with DS1402	COTS	
UPS	APC Smart-UPS SMT1500	COTS	
Network Switch	Dell X1008 Network Switch	COTS	
Network Switch	Dell X1018 Network Switch	COTS	
Network Switch	Dell X1026 Network Switch	COTS	

System Component	Hardware Version	Proprietary or COTS	Comments
Network Switch	Dell PowerConnect 2808 Network Switch	COTS	
Interface Hub	Tecla ShieldDos KDL-02001	COTS	
Sip and Puff	Enabling Devices Sip and Puff	COTS	
Headphones	Cyber Acoustics Headphones ACM-70	COTS	
Joystick	4-way joystick controller S26	COTS	
Paddles	Enblemart #88906 Rocker (Paddle) Switch	COTS	
Footswitches	ABLENET Jelly Bean Twist 10033400	COTS	
CF Card Reader	IOGEAR SDHC/microSDHC 0U51USC410 Card Reader	COTS	
CF Card Reader	Lexar USB 3.0 Dual-Slot reader	COTS	
CF Card Reader	Hoodman Steel USB 3.0 UDMA Reader 102015	COTS	
CF Card Reader	Lexar Professional CF card reader workflow CFR1	COTS	
ATI	ATI handset	Proprietary	Available from Dominion Voting
ATI	ATI-USB handset	Proprietary	Available from Dominion Voting
Smart Card Reader	ACS PC-Linked Smart Card Reader ACR39U	COTS	

System Limitations

This table depicts the limits the system has been tested and certified to meet.

Characteristic	Limiting Component	Limit	Comment
Ballot positions	The ballot	462	Both
Precincts in an election	EMS	1000; 250	Standard; Express
Contests in an election	EMS	4000; 250	Standard; Express
Candidates/Counters in an election	EMS	40000; 2500	Standard; Express
Candidates/Counters in a precinct	Tabulator	462	Both
Candidates/Counters in a tabulator	Tabulator	10000; 2500	Standard; Express
Ballot Styles in an election	Tabulator	4000; 750	Standard; Express
Ballot IDs in a tabulator	Tabulator	200	Both
Contests in a ballot style	Tabulator	125	Standard; Express

Characteristic	Limiting Component	Limit	Comment
Candidates in a contest	EMS	462; 231	Standard; Express
Ballot styles in a precinct	Tabulator	5	Both
Number of political parties	Tabulator	30	Both
“vote for” in a contest	Tabulator	30	Both
Supported languages in an election	Tabulator	5	Both
Number of write-ins	The ballot	462	Both

Functionality

2005 VVSG Supported Functionality Declaration

Feature/Characteristic	Yes/No	Comment
Voter Verified Paper Audit Trails		
VVPAT	N/A	
Accessibility		
Forward Approach	YES	
Parallel (Side) Approach	YES	
Closed Primary		
Primary: Closed	YES	
Open Primary		
Primary: Open Standard (provide definition of how supported)	YES	
Primary: Open Blanket (provide definition of how supported)	YES	
Partisan & Non-Partisan:		
Partisan & Non-Partisan: Vote for 1 of N race	YES	
Partisan & Non-Partisan: Multi-member (“vote for N of M”) board races	YES	
Partisan & Non-Partisan: “vote for 1” race with a single candidate and write-in voting	YES	
Partisan & Non-Partisan “vote for 1” race with no declared candidates and write-in voting	YES	
Write-In Voting:		
Write-in Voting: System default is a voting position identified for write-ins.	YES	
Write-in Voting: Without selecting a write in position.	NO	
Write-in: With No Declared Candidates	YES	
Write-in: Identification of write-ins for resolution at central count	YES	
Primary Presidential Delegation Nominations & Slates:		
Primary Presidential Delegation Nominations: Displayed delegate slates for each presidential party	YES	
Slate & Group Voting: one selection votes the slate.	YES	
Ballot Rotation:		
Rotation of Names within an Office; define all supported rotation methods for location on the ballot and vote tabulation/reporting	YES	Equal time rotation
Straight Party Voting:		
Straight Party: A single selection for partisan races in a general election	YES	
Straight Party: Vote for each candidate individually	YES	
Straight Party: Modify straight party selections with crossover votes	YES	
Straight Party: A race without a candidate for one party	YES	

Feature/Characteristic	Yes/No	Comment
Straight Party: "N of M race (where "N">1)	YES	
Straight Party: Excludes a partisan contest from the straight party selection	YES	
Cross-Party Endorsement:		
Cross party endorsements, multiple parties endorse one candidate.	YES	
Split Precincts:		
Split Precincts: Multiple ballot styles	YES	
Split Precincts: P & M system support splits with correct contests and ballot identification of each split	YES	
Split Precincts: DRE matches voter to all applicable races.	N/A	
Split Precincts: Reporting of voter counts (# of voters) to the precinct split level; Reporting of vote totals is to the precinct level	YES	
Vote N of M:		
Vote for N of M: Counts each selected candidate, if the maximum is not exceeded.	YES	
Vote for N of M: Invalidates all candidates in an overvote (paper)	YES	
Recall Issues, with options:		
Recall Issues with Options: Simple Yes/No with separate race/election. (Vote Yes or No Question)	YES	
Recall Issues with Options: Retain is the first option, Replacement candidate for the second or more options (Vote 1 of M)	NO	
Recall Issues with Options: Two contests with access to a second contest conditional upon a specific vote in contest one. (Must vote Yes to vote in 2 nd contest.)	NO	
Recall Issues with Options: Two contests with access to a second contest conditional upon any vote in contest one. (Must vote Yes to vote in 2 nd contest.)	NO	
Cumulative Voting		
Cumulative Voting: Voters are permitted to cast, as many votes as there are seats to be filled for one or more candidates. Voters are not limited to giving only one vote to a candidate. Instead, they can put multiple votes on one or more candidate.	NO	
Ranked Order Voting		
Ranked Order Voting: Voters can write in a ranked vote.	NO	
Ranked Order Voting: A ballot stops being counting when all ranked choices have been eliminated	NO	
Ranked Order Voting: A ballot with a skipped rank counts the vote for the next rank.	NO	
Ranked Order Voting: Voters rank candidates in a contest in order of choice. A candidate receiving a majority of the first choice votes wins. If no candidate receives a majority of first choice votes, the last place candidate is deleted, each ballot cast for the deleted candidate counts for the second choice candidate listed on the ballot. The process of eliminating the last place candidate and recounting the ballots continues until one candidate receives a majority of the vote	NO	
Ranked Order Voting: A ballot with two choices ranked the same, stops being counted at the point of two similarly ranked choices.	NO	

Feature/Characteristic	Yes/No	Comment
Ranked Order Voting: The total number of votes for two or more candidates with the least votes is less than the votes of the candidate with the next highest number of votes, the candidates with the least votes are eliminated simultaneously and their votes transferred to the next-ranked continuing candidate.	NO	
Provisional or Challenged Ballots		
Provisional/Challenged Ballots: A voted provisional ballots is identified but not included in the tabulation, but can be added in the central count.	YES	
Provisional/Challenged Ballots: A voted provisional ballots is included in the tabulation, but is identified and can be subtracted in the central count	NO	
Provisional/Challenged Ballots: Provisional ballots maintain the secrecy of the ballot.	YES	
Overvotes (must support for specific type of voting system)		
Overvotes: P & M: Overvote invalidates the vote. Define how overvotes are counted.	YES	Overvotes cause a warning to the voter and can be configured to allow voter to override.
Overvotes: DRE: Prevented from or requires correction of overvoting.	N/A	
Overvotes: If a system does not prevent overvotes, it must count them. Define how overvotes are counted.	YES	If allowed via voter override, overvotes are tallied separately.
Overvotes: DRE systems that provide a method to data enter absentee votes must account for overvotes.	N/A	
Undervotes		
Undervotes: System counts undervotes cast for accounting purposes	YES	
Blank Ballots		
Totally Blank Ballots: Any blank ballot alert is tested.	YES	Precinct voters receive a warning; both precinct and central scanners will warn on blank ballots.
Totally Blank Ballots: If blank ballots are not immediately processed, there must be a provision to recognize and accept them	YES	Blank ballots are flagged. These ballots can be manually examined and then be scanned and accepted as blank; or precinct voter can override and accept.
Totally Blank Ballots: If operators can access a blank ballot, there must be a provision for resolution.	YES	Operators can examine a blank ballot, re-mark if needed and allowed, and then re-scan it.
Networking		
Wide Area Network – Use of Modems	NO	
Wide Area Network – Use of Wireless	NO	

Feature/Characteristic	Yes/No	Comment
Local Area Network – Use of TCP/IP	YES	Client/server only
Local Area Network – Use of Infrared	NO	
Local Area Network – Use of Wireless	NO	
FIPS 140-2 validated cryptographic module	YES	
Used as (if applicable):		
Precinct counting device	YES	ImageCast Precinct
Central counting device	YES	ImageCast Central

Baseline Certification Engineering Change Orders (ECO)

None.