

Setup Inspection Requirements Gap Analysis

An overarching goal of the next VVSG is to have each requirement mapped to a principle and its associated guidelines. During the mapping activity for the Setup Inspection requirements, some requirements did not map to the current list of principles and guidelines. Others mapped directly to a principle and not any of the sub-guidelines.

The NIST team recommends no modifications to the principles and guidelines.

Other areas for future changes and development to the VVSG software installation requirements include:

- ◆ Remove all National Software Reference Library (NSRL) related content, which includes Part 1 5.2.1.2-A and 5.2.1.2-B. This information resides within section 5.7 of the [Election Assistance Commission's Testing & Certification Program Manual](#). The requirements were also removed from the [2015 VVSG 1.1](#).
- ◆ Remove 5.2.1.2-B.1 as it is a duplicate with 5.2.1.1-B.1 and 5.2.1.2-H.1.
- ◆ 5.2.3-B, C, and D are all extremely similar, and may be able to be collapsed into a single requirement. As an aside, requiring an external indicator that functions without software will prohibit the use of COTS mobile devices (e.g., phones, tablets) and possibly other low-cost computing devices (e.g., Raspberry Pi).
- ◆ Ensure a consistent flow in the numbering scheme of the requirements – [5.2.1.2-H](#), [5.2.1.2-H.1](#)
- ◆ Requirements 5.2.3-A thru 5.2.3-G all deal with setup and configuration, and alerting a poll worker / election official when a problem is approaching. These do not map nicely to the security principles and guidelines, and may be better placed elsewhere.

Below is a list of setup inspection requirements that did not map directly to a principle and/or guideline. If a guideline is listed, NIST found that it did not fully map to the requirement, although partial applicability is noted. It is possible that requirements without an associated guideline may be superfluous and should be deleted. For more information about each requirement, please reference VVSG 2007 at:

<http://collaborate.nist.gov/voting/pub/Voting/CyberSecurity/2007-VVSG.pdf>

5.2.1.2-A Software integrity verification

Requirement:	The voting device SHALL verify the integrity of software installed on programmed devices using cryptographic software reference information from the National Software Reference Library (NSRL), voting device owner, or designated notary repositories.
Applies to:	Voting device
Test Reference:	Part 3:5.2 "Functional Testing"
Discussion:	Cryptographic software reference information includes digital signatures and hash values. Notary repositories use software they receive to generate software integrity information (such as digital signatures or hash values) which can be used to verify the integrity of the piece of software. Notary repositories distribute software integrity information but they do not distribute the voting software or the software used to generate the software integrity information. This

	requirement updates [VVSG2005] I.7.4.6-b by creating a stand-alone requirement to verify that software installed on programmed devices of the voting device has not been modified.
Source:	[VVSG2005] I.7.4.6 (b)
Principle(s)/ Guideline(s):	

5.2.1.2-B Voting device, software integrity verification log

Requirement:	Voting devices shall be capable of performing a software integrity verification inspection that records, minimally, the following information to the device's event log: <ul style="list-style-type: none"> a. Time and date of the inspection; b. Information that uniquely identifies the software (such as software name, version, build number, etc.); c. Information that identifies the software integrity verification technique used; d. Results of the software verification, including the cryptographic software reference information used for the verification; and e. Information that uniquely identifies the voting device that contained the software that was verified.
Applies to:	Voting device
Test Reference:	Part 3:5.2 "Functional Testing"
Discussion:	
Source:	[VVSG2005] I.5.4.2
Principle(s)/ Guideline(s):	

5.2.1.2-B.1 EMS, software integrity verification log

Requirement:	EMSs and other programmed devices that identify and authenticate individuals also shall record identifying information of the individual and role that performed the inspection.
Applies to:	Programmed device
Test Reference:	Part 3:5.2 "Functional Testing"
Discussion:	
Source:	[VVSG2005] I.5.4.2
Principle(s)/ Guideline(s):	

5.2.1.2-H.1 EMS, property inspection log

Requirement:	EMSs and other programmed devices that identify and authenticate individuals also shall record identifying information of the individual and role that performed the inspection.
Applies to:	Programmed device
Test Reference:	Part 3:5.2 "Functional Testing"

Discussion:	
Source:	[VVSG2005] I.5.4.2
Principle(s)/ Guideline(s):	

5.2.3-A Backup power source charge indicator

Requirement:	The voting device SHALL indicate the remaining charge of backup power sources in quarterly increments (i.e. full, three-quarters full, half-full, quarter full, empty) at a minimum without the use of software.
Applies to:	Voting device
Test Reference:	Part 3:5.2 “Functional Testing”
Discussion:	Backup power sources for voting equipment include but are not limited to batteries.
Source:	VVSG 2007
Principle(s)/ Guideline(s):	General: High-Quality Construction <i>Handle errors actively and appropriately, recovering from failure gracefully – processing or avoiding well-known errors and/or software bugs; and avoiding single points of failure that could cause complete loss of voting capabilities</i> Justification: Ensuring that election officials know the battery status of a unit prevents failures from occurring.

5.2.3-B Cabling connectivity indicator

Requirement:	The voting device SHALL indicate the connectivity of cabling attached to the voting device without the use of software.
Applies to:	Voting device
Test Reference:	Part 3:5.2 “Functional Testing”
Discussion:	For example, LEDs can be used to indicate when power cables are connected and conducting electricity. LEDs can also be used to indicate when network cables are connected and can transmit information.
Source:	VVSG 2007
Principle(s)/ Guideline(s):	General: High-Quality Construction <i>Use trustworthy materials, methods, standards, and best practices – including accepted and appropriate tools/standards for constructing hardware and software, protocols for constructing and performing telecommunications, as well as best practices for quality assurance and configuration management</i> Justification: Best practices and configuration management helps to ensure this requirement is met.

5.2.3-C Communications operational status indicator

Requirement:	The voting device SHALL indicate the operational status of the communications capability of the voting device.
Applies to:	Voting device
Test Reference:	Part 3:5.2 “Functional Testing”
Discussion:	

Source:	VVSG 2007
Principle(s)/ Guideline(s):	<p>General: High-Quality Construction <i>Use trustworthy materials, methods, standards, and best practices – including accepted and appropriate tools/standards for constructing hardware and software, protocols for constructing and performing telecommunications, as well as best practices for quality assurance and configuration management</i></p> <p>Security: Detection/Monitoring <i>Voting system equipment records important activities through event logging mechanisms, which are stored in a format suitable for automated processing.</i> Justification: The operational status of the communications capability is the important activity recorded in this requirement.</p>

5.2.3-D Communications on/off indicator

Requirement:	The voting device SHALL indicate when the communications capability of the voting device is on/off without the use of software.
Applies to:	Voting device
Test Reference:	Part 3:5.2 “Functional Testing”
Discussion:	For example, LEDs can be used to indicate when a given device is on or off. Physical switches can be used to physically turn on or off devices.
Source:	VVSG 2007
Principle(s)/ Guideline(s):	<p>General: High-Quality Construction <i>Use trustworthy materials, methods, standards, and best practices – including accepted and appropriate tools/standards for constructing hardware and software, protocols for constructing and performing telecommunications, as well as best practices for quality assurance and configuration management</i></p> <p>Security: Detection/Monitoring <i>Voting system equipment records important activities through event logging mechanisms, which are stored in a format suitable for automated processing.</i> Justification: The operational status of the communications capability is the important activity recorded in this requirement.</p>

5.2.3-E Consumables remaining indicator

Requirement:	The voting device SHALL indicate the remaining amount of voting device consumables (i.e. ink, paper, etc.) in quarterly increments (i.e. full, three-quarters full, half-full, quarter full, empty) at a minimum.
Applies to:	Voting device
Test Reference:	Part 3:5.2 “Functional Testing”
Discussion:	
Source:	VVSG 2007
Principle(s)/ Guideline(s):	

5.2.3-F Calibration determination of voting device components

Requirement:	The voting device SHALL be able to determine the calibration of voting device components that require calibration.
Applies to:	Voting device
Test Reference:	Part 3:5.2 "Functional Testing"
Discussion:	Examples of voting device components that may require calibration are touch screens and optical scan sensors.
Source:	VVSG 2007
Principle(s)/ Guideline(s):	

5.2.3-G Calibration of voting device components adjustment

Requirement:	The voting device SHALL be able adjust the calibration of voting device components that require calibration.
Applies to:	Voting device
Test Reference:	Part 3:5.2 "Functional Testing"
Discussion:	
Source:	VVSG 2007
Principle(s)/ Guideline(s):	