

## Principle 11

### Access Control

The voting system authenticates administrators, users, devices, and services before granting access to sensitive functions.

#### 11.1 - Access privileges, accounts, activities, and authorizations are logged, monitored, and reviewed periodically and modified as needed.

##### 11.1-A Logging of Activities and Resource Access

The voting system must log any access to, and activities performed, on the voting system.

Applies to: voting system

###### Discussion

In the event of an error or incident, the user access log may assist in narrowing down the reason for the incident or error.

Status: New  
Updated: [Feb. 14, 2018](#)  
Source: N/A  
Gap notes:

##### 11.1-A.1 Voter Information in Log Files

The voting system must prevent the logging of any voter identifying information.

Applies to: voting system

###### Discussion

The logging and storing of voter identifying information after a ballot is cast, is a violation of voter privacy.

Status: New  
Updated: [Feb. 14, 2018](#)  
Source: N/A  
Gap notes: Voter privacy, Ballot secrecy

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Commented [FJM(1)]: Discuss the benefits of changing the overloaded term of "administrator" to "superuser" in order to avoid confusion.

Moved down [1]: 11.1-A Ensuring Authorized Access ¶

The voting system must only allow authorized users to access the voting system. ¶

¶  
Applies to: voting system ¶

###### Discussion ¶

Authorized users include voters, election officials, and poll workers. ¶

Status: → New ¶  
Updated: → Jan. 16, 2018 ¶  
Source: → N/A ¶  
Gap notes: → ¶

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### 11.1-B Access Control Log Timestamp

The voting system must include timestamps [for](#) all log entries.

Applies to: [voting system](#)

#### Discussion

Timestamped log entries will allow for easy auditing and review of access to the voting system.

Status: New  
Updated: [Feb. 14, 2018](#)  
Source: Derived from VVSG 2007 4.2.1-A  
Gap notes:

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### 11.1-C Access Attempt Log

The voting system must log all failed and successful attempts to access the voting system.

Applies to: [voting system](#)

#### Discussion

[A log of all attempts to access a voting system is necessary for analysis as mentioned in 11.1-B and 11.1-C.](#)

Status: New  
Updated: [Feb. 14, 2018](#)  
Source: N/A  
Gap notes:

### 11.1-D Disabling of Logging

The voting system must [prevent the disabling of logging.](#)

Applies to: [voting system](#)

#### Discussion

[This requirement promotes the integrity of the information logged by ensuring all activities are logged.](#)

Status: [New](#)  
Updated: [Feb. 14, 2018](#)  
Source: [N/A](#)  
Gap notes:

Deleted: 11.1-E Access Control Modifications ¶  
The voting system must only allow an administrator to make modifications to access privileges, accounts, activities, and authorizations. ¶  
¶  
Applies to: [voting system](#) ¶  
¶  
Discussion ¶  
The administrator is the only user authorized to make major changes within a voting system. Administrators are given this role to ensure all other users have efficient access to the information necessary to perform their roles. ¶  
Status: → [New](#) ¶  
Updated: → [Jan. 16, 2018](#) ¶  
Source: → [N/A](#) ¶  
Gap notes: → ¶  
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### 11.1-E Modification of Log Entries

The voting system must [prevent the modification of log entries.](#)

Applies to: voting system

**Discussion**

This requirement promotes the integrity of the information logged by ensuring all activities and not modifiable.

Status: New  
Updated: Feb. 14, 2018  
Source: N/A  
Gap notes:

**11.1-F Logging of Access Control Modifications**

The voting system must create log entries for all events which change the access control system including policies, privileges, accounts, users, groups or roles, and authentication methods.

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Applies to: voting system

**Discussion**

Access control logging supports accountability of actions by identifying and authenticating users.

Status: Updated  
Updated: Feb. 14, 2018  
Source: Derived from VVSG 2007 4.2.1-A  
Gap notes:

**11.1-G On Demand Access to Logs**

The voting system must provide administrators access to logs on demand, allowing for continuous monitoring and periodic review.

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Applies to: voting system

**Discussion**

Enabling administrators to export and review the logs is a useful feature. Continuous monitoring and review of access control logs gives the administrator the opportunity to analyze and make changes to permission, privileges, and quickly identify issues.

Status: Updated  
Updated: Feb. 14, 2018  
Source: Derived from VVSG 2007 4.2.1-A  
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## 11.2 - The voting system limits the access of users, **groups or roles**, and processes to the specific functions and data to which each entity holds authorized access.

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### 11.2-A Ensuring Authorized Access

Moved (insertion) [1]

The voting system must only allow authorized users to access the voting system.

Applies to: [voting system](#)

#### Discussion

Authorized users include voters, election officials, and poll workers.

Status: [New](#)  
Updated: [Feb. 14, 2018](#)  
Source: [N/A](#)  
Gap notes:

### 11.2-B Modifying Authorized User Lists

The voting system must allow **only** an administrator to **create** or modify the list of authorized users.

Applies to: [voting system](#)

#### Discussion

This requirement assists with ensuring only authorized users are given access to the voting system.

Status: [New](#)  
Updated: [Feb. 14, 2018](#)  
Source: [N/A](#)  
Gap notes:

Deleted: 11.2-A Data Isolation ¶  
The voting system must utilize a data isolation technology to enforce user and data separation on the voting system. ¶  
Applies to: [voting system](#) ¶  
Discussion ¶  
This separation of data will assist in limiting accidental or intentional modification of vote data. One such example includes sandboxing. ¶  
Status: → [New](#) ¶  
Updated: → [Jan. 16, 2018](#) → ¶  
Source: → [N/A](#) ¶  
Gap notes: ¶

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### 11.2-C Access Control Voting States

The voting system access control mechanisms must distinguish at least the following voting states from Table 2:

- a. [Pre-voting](#);
- b. [Activated](#);
- c. [Suspended](#); and
- d. [Post-voting](#)

Applies to: [voting system](#)

#### Discussion

Deleted: ¶

The groups or roles in (11.2- ) will be given specific permissions which may be affected by the voting state (Table 2).

Status: Updated  
Updated: Feb. 14, 2018  
Source: [VMSG2005] 1.7.2.1.1.7.2.1.1  
Gap notes:

Table 1 - Voting State Descriptions

STATE	DESCRIPTION
Pre-voting	Power-on, loading and configuring device software, maintenance, loading election-specific files, preparing for election day usage.
Activated	Activating the ballot, printing, casting, spoiling the ballot.
Suspended	Entered when an election official suspends voting.
Post-voting	Closing polls, tabulation, printing records, power-off.

### 11.2-D Access Control Configuration

The voting system must allow only an administrator to configure the permissions and functionality for each identity, group or role, or process to include account and group or role creation, modification, disablement, and deletion.

Applies to: voting system

#### Discussion

For vote-capture devices, each group or role may or may not have permissions for every voting state. Additionally, the permissions that a group or role has for a voting state may be restricted to certain functions. Table 3 shows an example matrix of group/role to system to voting state access rights; the table is not meant to include all activities. This requirement extends [VMSG2005] 1.7.2.1.1-1 by allowing configuration flexibility for permissions and functionality for each identity or group/role.

Privileged accounts include any accounts within the operating system, voting device software, or other third-party software with elevated privileges such as administrator, root, and maintenance accounts. This requirement extends [VMSG2005] 1.7.2.1.2 by allowing the creation and disabling of privileged accounts.

The administrator is the only user authorized to make major changes within a voting system. Administrators are given this group or role to ensure all other users have proper access to the information necessary to perform their duties.

Status: Updated  
Updated: Feb. 14, 2018

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Source: VVSG 2007  
Gap notes:

### 11.2-E Administrator Modification of Permissions

The voting system must allow only an administrator to create or modify permissions assigned to specific groups or roles.

Applies to: voting system

#### Discussion

The administrator's authority to create or modify permissions restricts user's from gaining unauthorized permissions.

Status: New  
Updated: [Feb. 14, 2018](#)  
Source: N/A  
Gap notes:

### 11.2-F Authorized Assigning Groups or Roles

The voting system must allow only an administrator to create or assign the groups or roles.

Applies to: voting system

#### Discussion

Table 1 is a list of groups or roles that should be included within the voting system.

Status: New  
Updated: [Feb. 14, 2018](#)  
Source: N/A  
Gap notes:

### 11.2-G Role-based Access Control Standard

Voting systems that implement role-based access control must support the recommendations for Core RBAC in the ANSI INCITS 359-2004 American National Standard for Information Technology – Role Based Access Control document.

Applies to: voting system

#### Discussion

This requirement extends [VVSG2005] I. 7.2.1.1-a by requiring role-based methods to follow ANSI INCITS 359-2004.

Status: Updated  
Updated: Feb. 14, 2018  
Source: [VVSG2005] I.7.2.1.1

**Deleted: 11.4-D Permission and Privilege Modification** ¶  
The voting system must allow only administrators to modify the permissions and privileges of other roles, users and processes. ¶  
Applies to: voting system ¶  
**Discussion** ¶  
¶  
Status: →New→ ¶  
Updated: →Jan. 16, 2018 ¶  
Source: →New → ¶  
Gap notes:

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### 11.2-G.1 Minimum Groups or Roles

At minimum, voting systems that implement RBAC must define the following groups or roles within Table 1.

Applies to: voting system

#### Discussion

Table 1 is a baseline list of groups or roles that should be included within the voting system.

Status:                      **New**  
Updated:                      **February 14, 2018**  
Source:                      **N/A**  
Gap notes: \_\_\_\_\_

*Table 2 – Minimum Voting System Groups or Roles for RBAC*

GROUP/ROLE	DESCRIPTION
Administrator	The administrator updates and configures the voting devices and troubleshoots system problems.
Voter	The voter role is a restricted process in the vote-capture device. It allows the vote-capture device to enter the Activated state for voting activities.
Election Judge/ <b>Precinct Captain</b>	The election judge has the ability to open the polls, close the polls, handle fled voters, recover from errors, and generate reports
Poll Worker	The poll worker checks in voters and activates the ballot style.
Central Election Official	The central election official loads ballot definition files.

### 11.2-G.2 Minimum Group or Role Permissions

At minimum, the voting system must use the groups or roles from Table 1 and the voting states from Table 2, to assign the minimum permissions in Table 3.

Applies to: voting system

#### Discussion

Table 4 defines the minimum functions according to user, voting state, and system. Other capabilities can be defined as needed by jurisdiction.

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 Updated:                      February 14, 2018  
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 Gap notes:

*Table 3 - Minimum Permissions per Group or Role*

GROUP/ROLE	SYSTEM	PRE-VOTING	ACTIVATED	SUSPENDED	POST-VOTING
<b>Administrator</b>	<b>EMS</b>	Full Access	Full Access	Full Access	Full Access
	<b>BMD/Electronic</b>	Full Access	Full Access	Full Access	Full Access
	<b>PCOS</b>	Full Access	Full Access	Full Access	Full Access
<b>Voter</b>	<b>EMS</b>	---	---	---	---
	<b>BMD/Electronic</b>	---	Cast and cancel ballots	---	---
	<b>PCOS</b>	---	Ballot Submission	---	---
<b>Election Judge/Precinct Captain</b>	<b>EMS</b>	---	---	---	---
	<b>BMD/Electronic</b>	Open polls, L&A	Close or suspend polls, Recover from errors	Exit suspended state	Generate reports
	<b>PCOS</b>	Open polls, L&A	Recover from errors	Exit suspended state	Generate reports
<b>Poll Worker</b>	<b>EMS</b>	---	---	---	---
	<b>BMD/Electronic</b>	---	Activate ballot	---	---
	<b>PCOS</b>	---	---	---	---
<b>Central Election Official</b>	<b>EMS</b>	Define and load ballot	---	---	Reconcile Provisional-challenged ballots, write-ins, generate reports
	<b>BMD/Electronic</b>	---	---	---	---
	<b>PCOS</b>	---	---	---	---

## 11.2-H Applying Permissions

The voting system must be capable of applying assigned groups or roles and permissions to authorized users.

Applies to: voting system

### Discussion

Once the user is assigned a group or role, the voting system must be capable of making the necessary changes to the user's permissions. The permissions are changed based on the assigned group or role.

Status:	New
Updated:	<a href="#">Feb. 14, 2018</a>
Source:	N/A
Gap notes:	

### Deleted: 11.2-G Access control voting states

The voting system access control mechanisms must distinguish at least the following voting states from Table 2:

Pre-voting;  
Activated;  
Suspended; and  
Post-voting

Applies to: voting system

### Discussion

The groups or roles in (11.2-) will be given specific permissions which may be affected by the voting state (Table 2).

Status: → Updated  
Updated: → Dec. 26, 2017  
Source: → [VMSG2005] I.7.2.1.I.7.2.1.1  
Gap notes: →  
[Table 2 - Voting State Descriptions](#)

STATE

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## 11.3 - The voting system supports strong, configurable authentication mechanisms to verify the identities of authorized users and includes multi-factor authentication mechanisms for critical operations.

### 11.3-A Access Control Mechanism Application

The voting system must use access control mechanisms to permit authorized access or prevent unauthorized access to the voting system.

Applies to: voting system

### Discussion

Access controls support the following concepts:

1. Limiting the actions of users, groups or roles, and processes (entities) to those that are authorized.
2. Limiting entities to the functions for which they are authorized.
3. Limiting entities to the data for which they are authorized.
4. Accountability of actions by identifying and authenticating users

Most modern operating systems natively provide configurable access control mechanisms that the voting system application can leverage.

### Deleted: 11.2-K Role-based access control standard

Voting systems that implement role-based access control must support the recommendations for Core RBAC in the ANSI INCITS 359-2004 American National Standard for Information Technology – Role Based Access Control document.

Applies to: voting system

### Discussion

This requirement extends [VMSG2005] I. 7.2.1.1-a by requiring role-based methods to follow ANSI INCITS 359-2004.

Status: → Updated  
Updated: → Dec. 26, 2017  
Source: → [VMSG2005] I.7.2.1.1  
Gap notes: →

### Deleted: 11.3-A General Access Control Mechanisms

The voting system must provide access control mechanisms.

Applies to: voting system

### Discussion

Access controls support the following concepts:

Limiting the actions of users, roles, and processes (entities) to those that are authorized.  
Limiting entities to the functions for which they are authorized.  
Limiting entities to the data for which they are authorized.  
Accountability of actions by identifying and authenticating users

Status: → Updated  
Updated: → Jan. 17, 2017  
Source: → VMSG2005 I.7.2.1.2-1, I.7.2.1.2-2  
Gap notes: →

Status: Updated  
Updated: [Feb. 14, 2018](#)  
Source: VVSG2005 I.7.2.1.2-1, I.7.2.1.2-2  
Gap notes:

### 11.3-B Multi-factor Authentication for Critical Operations

The voting system must be capable of using multi-factor authentication to verify a user has authorized access to perform critical operations. Critical operations include:

- Software updates to the [certified](#) voting system
- Aggregation and [tabulation](#)
- Enabling network functions, [wireless](#), and [use of](#) telecommunications
- [Changing device states](#), including opening and closing the polls
- [Deleting or modifying the audit trail](#)
- [Modifying authentication mechanisms](#)

Applies to: [voting system](#)

#### Discussion

NIST SP 800-63-3 Digital Identity Guidelines [provides additional information useful in fulfilling this requirement](#). NIST SP 800-63-3 defines Multi-factor authentication (MFA) as follows:

*[“An authentication system that requires more than one distinct authentication factor for successful authentication. Multi-factor authentication can be performed using a multi-factor authenticator or by a combination of authenticators that provide different factors.](#)*

*[The three authentication factors are something you know, something you have, and something you are.”](#)*

[Multifactor authenticators may include, but are not limited to the following:](#)

- [Username & password](#)
- [Smartcard \(e.g., voter access card\)](#)
- [iButton](#)
- [Biometric authentication \(e.g., fingerprint\)](#)

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Gap notes:

### 11.3-C **M**ulti-factor **A**uthentication for Administrators

The voting system must authenticate the administrator with a multi-factor authentication mechanism.

Applies to: Voting system

#### Discussion

This requirement extends [VVSG2005] I.7.2.1.2-e by requiring multi-factor authentication for the voting **system** administrator **group or** role.

Status: New  
Updated: [Feb. 14, 2018](#)  
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### 11.3-D **U**sername and **P**assword **M**anagement

If the voting system uses a user name and password authentication method, the voting **system** must allow **only** the administrator to enforce password strength, histories, and expiration.

Applies to: [voting system](#)

#### Discussion

This requirement extends [VVSG2005] I.7.2.1.2-e by requiring strong passwords, password histories, and password expiration.

Status: Updated  
Updated: [Feb. 14, 2018](#)  
Source: [VVSG2005] I.7.2.1.2-1  
Gap notes:

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#### 11.3-D.1 Password **C**omplexity

The voting **system** must allow **only** the administrator to specify password strength for all accounts including minimum password length, use of capitalized letters, use of numeric characters, and use of non-alphanumeric characters per NIST 800-63 Electronic Authentication Guideline standards.

Applies to: [voting system](#)

#### Discussion

This requirement extends [VVSG2005] I.7.2.1.2-e by allowing the administrator group or role flexibility in configuring password strength. It also requires the use of NIST 800-63 standards.

Status: Updated  
Updated: [Feb. 14, 2018](#)  
Source: [VVSG2005] I.7.2.1.2-1  
Gap notes:

### 11.3-D.2 Minimum Password Complexity

The voting system must compare all passwords against a manufacturer specified list of well-known weak passwords.

Applies to: voting system

#### Discussion

Examples of common weak passwords include 0000, 1111, 1234.

Status: Updated  
Updated: [Feb. 14, 2018](#)  
Source: [VVSG2005] I.7.2.1.2-1  
Gap notes:

### 11.3-D.3 Usernames Within Passwords

The voting system must ensure that the username is not used in the password.

Applies to: voting system

#### Discussion

This requirement extends [VVSG2005] I.7.2.1.2-e by restricting the use of usernames and related information in passwords.

Status: Updated  
Updated: [Feb. 14, 2018](#)  
Source: [VVSG2005] I.7.2.1.2-1  
Gap notes:

## 11.4 - Default access control policies enforce the principles of least privilege and separation of duties.

### 11.4-A Least Privilege

By default, the voting system must implement the principle of least privilege including, deny<sub>ing</sub> access to functions and data unless explicitly permitted.

Applies to: Voting system

**Deleted:** Account information for password restriction

**Deleted:** 11.3-F.4 Automated password expiration¶  
The voting device must provide a means to automatically expire passwords in accordance with the voting jurisdiction's policies.¶

Applies to: Voting device¶

#### Discussion¶

Jurisdiction policies often expire passwords after each election. This requirement extends [VVSG2005] I.7.2.1.2-e by requiring the expiration of unchanged passwords.¶

Status: →Updated¶

Updated: →Jan. 2, 2018¶

Source: →[VVSG2005] I.7.2.1.2-1¶

Gap notes: →→¶

**Commented [MS6]:** What about Access control precedence?

Except for the default denial the voting system a policy or rule denying a subject's access must take precedence over a policy or rule allowing access.

This allows for a permission to be removed for individuals when membership in a group would give them that permission. This isn't an issue if a true RBAC system is used, or if you can assign permissions via groups.

**Commented [HGE/7R6]:** This seems reasonable to add. Thanks for pointing this out. I need to make major adjustments because I think my initial model was more RBAC focused. I need to generalize for a group/permissions model.

#### Discussion

This requirement extends [VMSG2005] I.7.2.1.2-a by requiring explicit authorization of subjects based on access control policies.

Status: Updated  
Updated: [Feb. 14, 2018](#)  
Source: [VMSG2005] I.7.2.1.2-1  
Gap notes:

### 11.4-B Separation of Duties

Voting system documentation must include suggested practices for dispersing critical operations across multiple groups or roles.

Applies to: [voting system](#)

#### Discussion

Guidance for implementing separation of duties within the voting system is imperative to implement the separation of duties principle. Separation of duties is meant to divide user functions and roles so that there is no conflict of interest.

Status: [New](#)  
Updated: [Feb. 14, 2018](#)  
Source:  
Gap notes:

## 11.5 - Logical access to voting system assets are revoked when no longer required.

### 11.5-A Access Time Period

The voting system must only allow user's authorized access within a time period specified by the administrator.

Applies to: [voting system](#)

#### Discussion

After authentication, a user's access to a voting system should time-out after a specified period of time. This will avoid unauthorized access to the voting system by unauthorized users. Once a user's access has timed-out, the user must re-authenticate to the voting system.

Status: New  
Updated: [Feb. 14, 2018](#)

#### Deleted: ¶

**Deleted: 11.4-B Minimum permissions default ¶**  
The voting system's default access control permissions must implement the minimum permissions needed for each role or group. ¶  
Applies to: [voting System¶](#)

**Discussion ¶**  
Minimum permissions restrict the group or role to access only the information and resources that are necessary for its purpose. This requirement extends [VMSG2005] I. 7.2.1.1 and I.7.2.1.2 by requiring minimum default access control permissions. ¶  
Status: → Updated ¶  
Updated: → Dec. 27, 2017 ¶  
VMSG 1.1: → [VMSG2005] I.7.2.1.1, I.7.2.1.2-1 ¶  
Gap notes: → ¶

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**Deleted: 11.4-C Privilege escalation prevention ¶**  
The voting device must prevent a lower-privilege process from modifying higher-privilege processes and data. ¶  
Applies to: [Voting device¶](#)

**Discussion ¶**  
This requirement extends [VMSG2005] I.7.2.1 by preventing unauthorized process modification ¶  
Status: → Updated ¶  
Updated: → Dec. 27, 2017 ¶  
VMSG 1.1: → [VMSG2005] I.7.2.1 and [VMSG2005] II.6.4.1 ¶  
Gap notes:

#### Deleted: → ¶

**Deleted: 11.4-C Critical Operations Authorization ¶**  
The voting system must ensure that an administrator authorizes each critical operation. ¶  
Applies to: [voting system¶](#)

**Discussion ¶**  
This requirement extends [VMSG2005] I.7.2 by requiring authorization of privileged operations. ¶  
Status: → Updated ¶  
Updated: → Dec. 27, 2017 ¶  
VMSG 1.1: → [VMSG2005] I.7.2.1 and [VMSG2005] II.6.4.1 ¶  
Gap notes: →

**Deleted: 11.4-C Separation of Duties ¶**  
Other than the administrator, the voting system must not allow a single user to perform all critical operations. ¶  
Applies to: [Voting system¶](#)

**Discussion ¶**  
Proper implementation of separation of duties should assist in reducing or removing conflict of interest, fraud, and the risk of collusion. ¶  
Status: → New ¶  
Updated: → ¶  
Source: → ¶  
Gap notes: → ¶

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Source: N/A  
Gap notes:

### 11.5-B Account Lockout

The voting system must lockout roles or individuals after an administrator specified number of consecutive failed authentications attempts.

Applies to: voting system

#### Discussion

This requirement can be implemented using a technique such as, exponential backoff. Exponential backoff requires that after each unsuccessful authentication attempt, the time period before another authentication attempt can be made grows exponentially. For instance, after 1 unsuccessful authentication attempt, the user must wait 0 seconds before trying again. After 2 unsuccessful authentication attempts, the user must wait 2 seconds. 3 unsuccessful attempts requires 4 seconds, and so on. This requirement prevents password guessing attacks such as brute force.

Status: Updated  
Updated: [Feb. 14, 2018](#)  
VVSG 1.1: [VVSG2005] I.7.2.1.2-1  
Gap notes:

### 11.5-B.1 Lockout Time Duration

The voting system must allow only an administrator to define the lock out duration.

Applies to: voting system

#### Discussion

This requirement extends [VVSG2005] I.7.2.1.2 by allowing the administrator or role flexibility in configuring the account lockout policy.

Status: Updated  
Updated: [Feb. 14, 2018](#)  
VVSG 1.1: [VVSG2005] I.7.2.1.2-1  
Gap notes:

**Deleted: 11.5-B Access Time-out**  
The voting system must require a user to re-authenticate once the specified time period from 11.5-A has timed out.  
Applies to: [voting system](#)  
**Discussion**  
Once a user's access has timed-out, the user must re-authenticate to the voting system. This ensures the accessing users is authorized.  
Status: [New](#)  
Updated: [Jan. 16, 2017](#)  
Source: [N/A](#)  
Gap notes:

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**Deleted:** a user to wait for a specified time period after a failed authentication attempt. The time period increases exponentially after each failed attempt.

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**Deleted: 11.5-D Re-instate Administrator(s)**  
The voting system must require administrators to be re-instated for every election.  
Applies to: [Voting system](#)  
**Discussion**  
Status: [New](#)  
Updated: [Jan. 17, 2018](#)  
Source: [N/A](#)  
Gap notes:

**11.5-E Re-authenticate**  
The voting system must require re-authentication of users for every election.  
Applies to: [Voting system](#)  
**Discussion**  
Status: [New](#)  
Updated: [Jan. 17, 2018](#)  
Source: [N/A](#)  
Gap notes:

## 11.2-G Access control voting states

The voting system access control mechanisms must distinguish at least the following voting states from Table 2:

Pre-voting;  
Activated;  
Suspended; and  
Post-voting

Applies to: voting system

### Discussion

The groups or roles in (11.2-\_) will be given specific permissions which may be affected by the voting state (Table 2).

Status: Updated  
Updated: Dec. 26, 2017  
Source: [VVSG2005] I.7.2.1,I.7.2.1.1  
Gap notes:

*Table 2 - Voting State Descriptions*

STATE	DESCRIPTION
<b>Pre-voting</b>	Power-on, loading and configuring device software, maintenance, loading election-specific files, preparing for election day usage.
<b>Activated</b>	Activating the ballot, printing, casting, spoiling the ballot.
<b>Suspended</b>	Entered when an election official suspends voting.
<b>Post-voting</b>	Closing polls, tabulation, printing records, power-off.

## 11.2-H Minimum Group or Role Permissions

At minimum, the voting system must use the groups or roles from Table 1 and the voting states from Table 2, to assign the minimum permissions in Table 3.

Applies to: voting system

### Discussion

Table 4 defines the minimum functions according to user, voting state, and system. Other capabilities can be defined as needed by jurisdiction.

Status: New  
 Updated: Jan. 30, 2018  
 Source: N/A  
 Gap notes:

Table 3 - Minimum Permissions per Group or Role[HGE(1)]

GROUP/ROLE	SYSTEM	PRE-VOTING	ACTIVATED	SUSPENDED	POST-VOTING
Administrator	EMS	Full Access	Full Access	Full Access	Full Access
	BMD/Electronic	Full Access	Full Access	Full Access	Full Access
	PCOS	Full Access	Full Access	Full Access	Full Access
Voter	EMS	---	---	---	---
	BMD/Electronic	---	Cast and cancel ballots	---	---
	PCOS	---	Ballot Submission	---	---
Election Judge/Precinct Captain	EMS	---	---	---	---
	BMD/Electronic	Open polls, L&A	Close or suspend polls, Recover from errors	Exit suspended state	Generate reports
	PCOS	Open polls, L&A	Recover from errors	Exit suspended state	Generate reports
Poll Worker	EMS	---	---	---	---
	BMD/Electronic	---	Activate ballot	---	---
	PCOS	---	---	---	---
Central Election Official	EMS	Define and load ballot	---	---	Reconcile Provisional-challenged ballots, write-ins, generate reports
	BMD/Electronic	---	---	---	---
	PCOS	---	---	---	---

Table 4 - Example Access Capabilities per Role and Voting State

ROLE	PRE-VOTING	ACTIVATED	SUSPENDED	POST-VOTING
<b>Administrator</b>	Full Access	Full Access	Full Access	Full Access
<b>Voter</b>	N/A	Cast and cancel ballots	N/A	N/A
<b>Election Judge/Precinct Captain</b>	Open polls	Close polls, enter suspended state, handle fled voters, and recover from errors	Exit suspended state	Generate reports
<b>Poll Worker</b>	N/A	Activate ballot	N/A	N/A
<b>Central Election Official</b>	Define and load ballot	N/A	N/A	Reconcile Provisional-challenged ballots, write-ins, generate reports
<b>Application or Process</b>	Custom per application or process	Custom per application or process	Custom per application or process	Custom per application or process

### 11.2-I Assign User

The voting system must allow only an administrator to assign a group or role to an authorized user.

Applies to: [voting system](#)

#### Discussion

The administrator needs to have the authority to assign users to a specific group or role.

Status: New  
 Updated:  
 Source: N/A  
 Gap notes: