



VERITY®

administrator's guide

Build



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administrator's guide



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introduction

about this guide

This guide outlines the processes and steps for creating and deploying an election using the Verity Voting System. The particular software and device implementation may vary depending on your state and jurisdiction.

This document focuses on software administration for the Verity Build application. This guide is intended as an accompaniment to the Verity Build training course, as well as a practical user guide for software operation in an election setting. This document provides step-by-step instructions for each of the essential software processes, including processes related to ballot proofing

and media creation in Build. The *Verity Administrator's Guides* are designed to be used by election officials and staff in conjunction with the *Verity Support Procedures Guide* and *Verity Polling Place Operations Guide*. Together these documents will provide a comprehensive reference for all election-related activities.

objectives of the Verity software training courses

Through the Verity Build training course associated with this document, trainees learn the procedures necessary to create and deploy a successful election with the Verity Voting System, with special attention to skills required to proof and print ballots and write election media in Verity Build.

election security

security features of Verity

- ▶ Verity Voting utilizes the AAA (authentication, authorization, and audit) security framework.
- ▶ All Verity software has been tested by an independent test lab to ensure proper security.
- ▶ Verity uses a multi-layered authentication process.
- ▶ Verity software is tamper-evident; any attempts to alter the function of the software would be evident when tested.



- ▶ Comprehensive audit logs are generated for all login attempts, data transfers, configuration changes, and errors. Logs are stored redundantly and securely.
- ▶ Vote records are stored redundantly for security and auditability, risk mitigation and disaster recovery.
- ▶ The integrity of the data is protected from power outage, power surge, magnets, and rough handling.

Verity incorporates the latest generation of voting technology features with tamper-evident controls and non-standard port connectors. Verity's secure architecture includes trusted build software verification – if an unauthorized change is detected, the voting device will not start. Verity also offers a paper-based voting option; Paper records can solidify trust that the software is working correctly through a paper check of vote records.

Verity's easy-to-use auditing dashboard allows election officials to filter and review cast ballot vote records and ballot images, and it heightens public confidence in the election process. Officials can filter cast vote records by accessing a precinct, polling place, device, vDrive, scan batch, contest, or other user-defined variables.

Verity adheres to the most current best practices in voting technology for application security, role management, intrusion detection, software validation and data validation. Verity's audit logging features allows for independent verification of the Verity system's operation and accuracy, contributing to higher voter confidence. Verity's superior information design includes efficient audit logs in plain language, and robust filters for ballot images and cast vote record data exports.

election security recommendations

Verity provides state of the art voting system security. In addition to the security provided by the system, we also recommend jurisdictions follow standard election security procedures. Some of these include:

- ▶ Restricting access to voting equipment behind locked doors when not in use.
- ▶ Ensuring chain of custody when delivering, receiving or transporting any voting equipment or ballots.
- ▶ Never leaving voting equipment unattended when polling place is open.
- ▶ Never removing or tampering with seals except in controlled circumstances.
- ▶ Never issuing Access Codes or paper ballots until the voter has been properly qualified and there is an available voting booth.
- ▶ Reporting any suspicious activity to the local election officer.



Verity system components

hardware components

**TIP:**

The particular quantities and types of voting equipment may vary depending on your jurisdiction.

Verity vDrives

- ▶ In the Verity system, **vDrives** are used to transfer digital ballot styles from the Verity software to voting devices, and to transfer voted ballots to Verity software for tabulation.



vDrives are inserted into a standard USB port; each Verity Scan, Print, Touch Writer, and Controller voting device has its own vDrive.

hardware components, *continued*

Verity Touch Writer with Access

- ▶ Using **Verity Touch Writer**, voters mark digital ballots using a touch screen. After the voter has confirmed the selections, the voter prints the marked ballot on the attached printer. The voter then retrieves and casts the ballot.



Verity Touch Writer devices are compatible with **Verity Access**, which provides the voter with additional input options: buttons with scrolling wheel, headphones, and tactile button or sip-and-puff devices. Verity Access can be docked within the Verity Touch Writer base or held in hand.



hardware components, *continued*

Verity Scan

- ▶ **Verity Scan** is a polling-place-based digital scanner for casting ballots. Scan can be used with hand-marked ballots or with those printed using the Touch Writer. Verity Scan allows the voter the opportunity to check and correct the ballot before casting. Verity Scan deposits scanned ballots into its ballot box for secure storage.



Verity Print

- ▶ Using **Verity Print**, you can print and issue blank paper ballots to voters. The voter votes their ballot and casts it either using Verity Scan, or into a ballot box to be scanned centrally.



hardware components, *continued*

Verity Controller *and* Verity Touch

- ▶ **Verity Controller and Verity Touch** is a polling place-based Direct Record Electronic (DRE) Voting system. Using Verity Controller and Verity Touch, poll workers issue access codes with Verity Controller, which voters use to access, mark and cast digital ballots via a touch screen on a Verity Touch. Multiple Touch devices can be connected to a single Controller device. Verity Touch, like Touch Writer, is compatible with Verity Access.



hardware components, *continued*

Verity Key

- ▶ **Verity Key** is a small security device that is programmed for each election. Verity Key is inserted into a USB port.



Verity Key is part of Verity's two-factor authentication process. Two-factor authentication requires each user to have something (a programmed Verity Key) and to know something (the passcode associated with the Verity Key). Both the user passcode and the Verity Key must be authenticated together.

Critical operations within the Verity Voting system require the Verity Key to be inserted and the passcode to be entered. Only when the Verity system authenticates the Verity Key and password will it allow the operation to continue.

USB media

- ▶ Off-the-shelf USB media are used to archive and export data from Verity workstations. All USB media used for these tasks should be formatted as **NTFS**.

actions requiring use of the Verity Key

use in Verity Build

- ▶ Verity Keys are written for the current election in Verity Build. When writing the Verity Key in Build, the user will assign application and device passwords for the election. See page 108 of this guide.

use in voting devices

- ▶ Verity Key is required to predefine voting devices with the proper polling place prior to deployment. The Verity Key is removed from the device after predefining, before the device is sealed and transported to the polling place. See the *Verity Support Procedures Guide* for predefining procedures.

use in Verity Central

- ▶ In Central, the Verity Key is required in order to import a signed election export from a Verity Build workstation. The user must know the Verity Key application password, set in Build. See the *Verity Administrator's Guide: Central*.
- ▶ A Verity Key is also required in order to create a Recovery vDrive in the event of a damaged or lost vDrive in Central. The user must know the Verity Key application password, set in Build. See the *Verity Administrator's Guide: Central*.

actions requiring use of the Verity Key, *continued*

use in Verity Relay

- ▶ In Relay, the Verity Key is required in order to import a signed election export from a Verity Build workstation. The user must know the Verity Key application password, set in Build.

use in Verity Count

- ▶ In Count, the Verity Key is required in order to import a signed election export from a Verity Build workstation. The user must know the Verity Key application password, set in Build. See the *Verity Administrator's Guide: Count*.
- ▶ Verity Key is also required in order to read the first vDrive for an election into Count. See the *Verity Administrator's Guide: Count*.

the Verity software suite

Verity Data

- ▶ In Verity Data, you can enter, import and manage election and jurisdiction data, enter translations, and record audio. Verity Data allows you to choose ballot templates, preview ballots, and lock the election data so that it may be opened in Verity Build.

Verity Build

- ▶ In Verity Build, you can open an election, proof data, print ballots, and write vDrives. In Build, you will perform the final steps to prepare the ballot for your election.

Verity Central

- ▶ Verity Central is a powerful application designed to manage central ballot scanning operations. Here you can scan, review ballots, resolve write-in votes and voter intent issues, and export cast vote records for tabulation.

Verity Relay

- ▶ Verity Relay is an application designed to receive transmissions from specially-equipped Verity Scan with Relay devices. Transmitted data is written to a transfer vDrive and taken to Verity Count for tabulation.

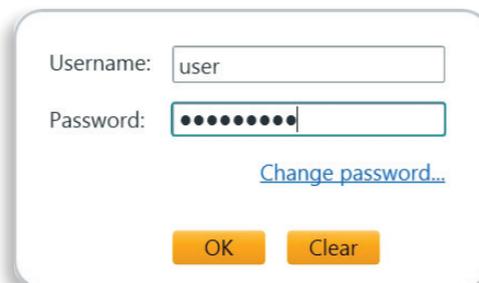
Verity Count

- ▶ Verity Count is Verity's comprehensive application for ballot tabulation. In Count, you will read vDrives, tabulate ballots, resolve write-in votes, print reports, and export election results.

getting started with Verity

logging in to Verity

Enter your User Name and Password, and then click **OK** to begin using Verity. Selecting the **Log Out** link in the upper right corner in any application will return you to this Login screen.



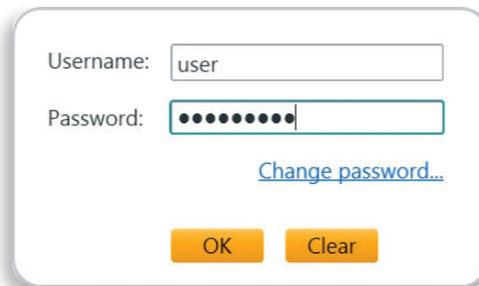
A screenshot of the Verity login interface. It features two input fields: 'Username:' with the text 'user' and 'Password:' with a masked password of ten dots. Below the password field is a blue link labeled 'Change password...'. At the bottom are two orange buttons: 'OK' and 'Clear'.

logging in to Verity, *continued*

NOTE: *the first time you log in to a Verity workstation you will use a login supplied by Hart. You will then need to create your own unique login for subsequent use.*

- ▶ The first time you log in, Verity will prompt you to create a new password.
- ▶ At any time, you can use the **Change password...** link on the Login screen to create a new password:

1 Select **Change password...** ▶

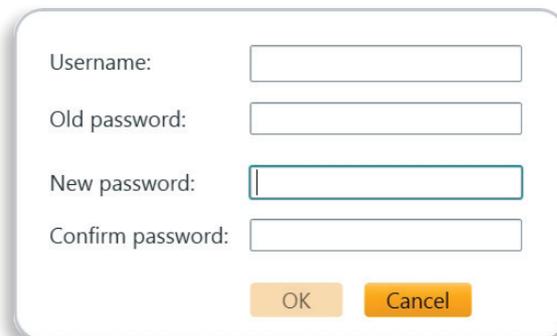


Username:

Password:

[Change password...](#)

2 Enter your existing password, and then enter a new password. Enter the new password a second time to confirm, and then click **OK**. ▼



Username:

Old password:

New password:

Confirm password:

the Verity home screen

The home screen is the first thing you will see after you log in to a Verity workstation. The home screen has several large buttons or 'tiles'.

- ▶ Selecting the **Home** link in the upper left corner in any application will return you to this screen.



- ▶ Depending on the workstation you are using, the tiles shown will vary; below, for example, is the home screen of a Verity Data/Build workstation. In this case, clicking the leftmost tile will open the Verity Data application.



- ▶ In the bottom right corner is the **Shutdown** button. Clicking this button will shut down the Verity computer workstation. For details on proper shutdown procedures for networked workstations, see page 59.

the Verity home screen, *continued*

In addition to the application tile(s) (Data, Build, Central, Relay or Count), there are three tiles labeled Desktop, Manage, and Users. Clicking these tiles will open the Desktop, Manage, or Users applications. These three applications are available to authorized users on all workstations.*



The **Desktop** application allows you to set date and time for the Verity workstation, export file hashes, enter a passcode to access the Windows operating system, or configure a printer.



The **Manage** application (**available only on server workstations, see page 55*) allows you to create, open or manage your elections. Manage is also used to archive an existing election and restore an archived election.



The **Users** application allows you to create and manage users and set user privileges.

the Desktop application



The **Desktop** application contains three tiles that allow you to set the time, export file hashes, or access the Windows operating system. To access the Desktop application, click the Desktop tile on the Verity home screen.



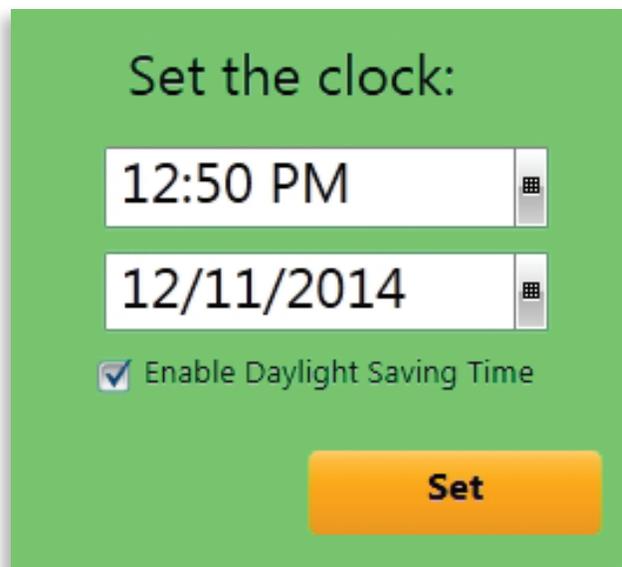
- ▶ **Setting the clock:** Setting the workstation time and date here will affect all Verity applications installed on the workstation.
- ▶ **Exporting file hashes:** Verity Desktop allows Administrator users to export file hashes to a removable drive so that a file hash test can be performed. In a file hash test, the exported data is compared against a trusted build of the software, to confirm that no unauthorized changes were made to the software components.
- ▶ **Accessing the operating system:** For security purposes, a Verity workstation normally operates in what is known as "Kiosk" mode, in which the Windows desktop is not accessible, and the user only has access to the Verity applications installed. To access the Windows desktop, you must request a code from Hart.
- ▶ **Configuring a printer:** Here you can upload a configuration file for an installed printer.

the Desktop application, *continued*

setting the system clock and date

- 1 Under **Set the clock**, you can update the time and/or date by clicking the time or date field and typing in the desired value.
- 2 Check the box to enable Daylight Savings Time, if desired.
- 3 Click **Set**.

NOTE: *When setting the time, you must include AM or PM.*



The screenshot shows a dialog box titled "Set the clock:" with a green background. It contains two input fields: the first is for the time, showing "12:50 PM", and the second is for the date, showing "12/11/2014". Below these fields is a checked checkbox labeled "Enable Daylight Saving Time". At the bottom right of the dialog is an orange button labeled "Set".

the Desktop application, *continued*

exporting file hashes

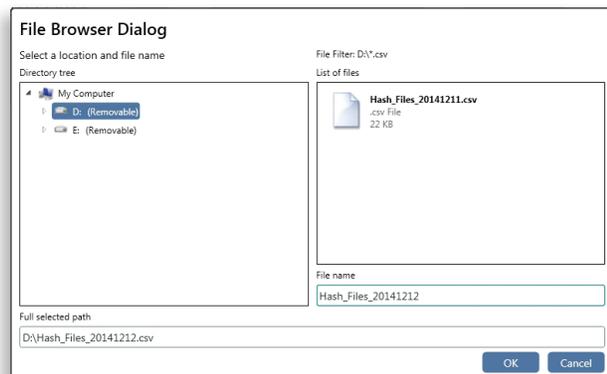
TIP:

File hashes are used to verify that the Verity software has not been tampered with in any way since it was installed. For information about verifying file hashes, see the following page. For instructions on exporting file hashes on devices, see page 30.

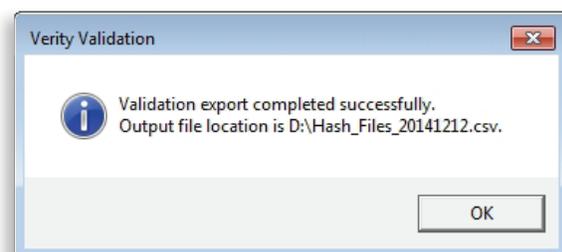
1 Under Export file hashes to a removable drive, click **Export**. ▶



2 Browse to the location where you would like to save the files, and then click **OK**. ▶



3 You will see the message **Validation export completed successfully...**; click **OK**. ▶



about file hashes

Verity Desktop allows Administrator users to export file hashes to a removable drive. This provides a means of verifying, using hash testing, that the software installation is identical to the certified software. The generation of hash files is a reproducible method of reading a data stream to produce a number (the “hash value”) that serves as a digital “fingerprint” of the data. Hash testing is a common method used to verify the integrity of installed software, and may be used to confirm that the voting system software running on your workstations matches the software as certified by the EAC.

To conduct hash testing, a third party program may be used to generate the hash value for installed software, and the hash value can be compared to that of the original source data to confirm that it has not been altered or corrupted. General directions for finding and downloading a third-party hash value generation tool and using that tool to verify Hart Voting System software application hash values are outlined below.

This information is being shared as a courtesy by Hart InterCivic. Contact your state’s or jurisdiction’s election authority for additional information concerning hash testing requirements in your jurisdiction. Consult your Information Technology department for assistance with hash tools.

For further information, see the Verity Knowledge Base Article *Hash Testing for Installed Software*.

exporting file hashes on Verity voting devices

As with Verity software workstations, you can also export file hashes from the Touch, Controller, Touch Writer, Print and Scan devices themselves.

- 1** On a non-Verity workstation, prepare a standard USB flash drive (*do NOT use a vDrive*): on the USB flash drive, create a folder named "**HartValidation**".
- 2** Set up the device (Touch, Controller, Touch Writer, Print or Scan) and connect it to AC power. Open the vDrive compartment. The voting device should not have a vDrive or Key inserted.
- 3** Insert the USB flash drive into one of the two USB ports inside the vDrive compartment on the voting device.
- 4** Press the red button on the back of the device to power it on. Look for the Verity Initialization screen. ▶



exporting file hashes on voting devices, *continued*

5 When you see the Verity Initialization screen, press and hold the blue Validation button inside the vDrive compartment.

6 Hold the button down until you see the message “Calculating and saving file hashes”. This may take some time.

NOTE: *If you do not see the above message, this may mean that either a) the HartValidation folder was not found on the inserted USB drive, or b) the Validation button was not pressed/held as directed. Verify the correct folder is present on the USB drive, restart the device and repeat steps 4-6.*

7 Remove the USB drive. Repeat the process with fresh USB flash drives for any additional devices.

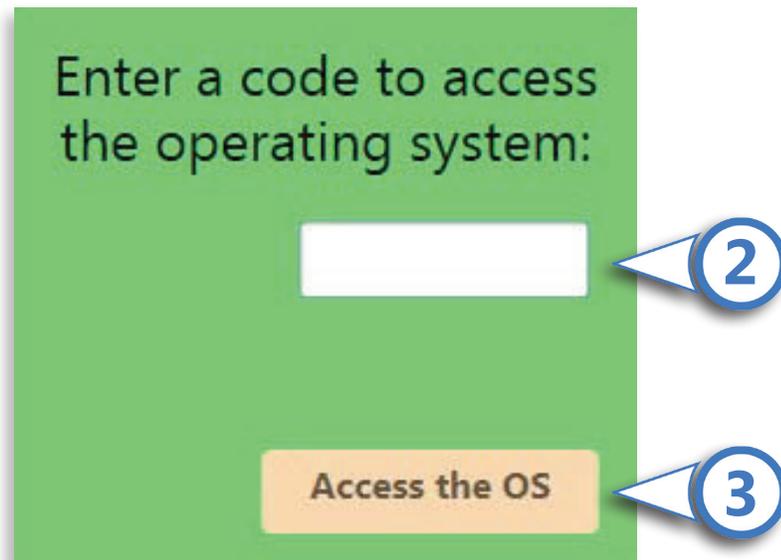
8 For information on comparing exported Hash files to the trusted software build, see the Verity Knowledge Base article *Hash Testing for Installed Software*.

the Desktop application, *continued***TIP:**

As a security measure, during normal operation, the computer desktop is not available while the Verity software is running. This ensures that access to election data is managed only through secure access to the Verity applications.

accessing the Windows operating system

- 1** Contact Hart Support (1.866.ASK.HART) and request a code.
- 2** Under **Enter a code to access the operating system**, type in the code you are issued.
- 3** Click **Access the OS**.

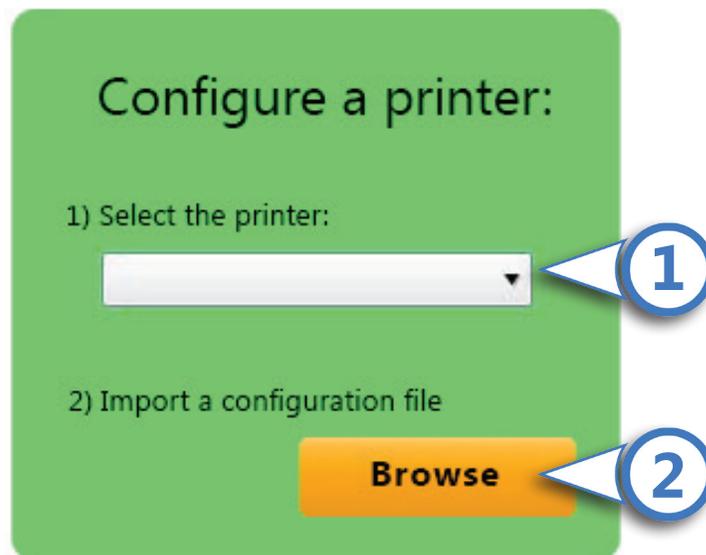


the Desktop application, *continued*

configuring a printer

1 Click the drop-down menu to select a printer from the list of installed printers. The printer must be powered on.

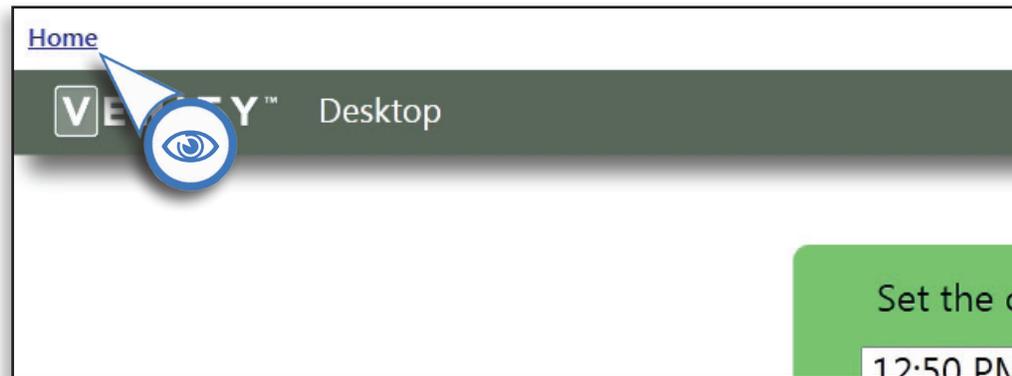
2 Click the **Browse** button to browse to locate and import a printer configuration file for the printer. For questions and assistance, contact Hart Support at 1.866.ASK.HART.



the Desktop application, *continued*

returning to the Verity home screen

- ▶ To return to the Verity home screen from any application, click **Home** in the upper *left* corner.



logging out of Verity and returning to the Verity login screen

- ▶ To log out of Verity and return to the Verity login screen from any application, click **Log Out** in the upper *right* corner.



the Manage application

In the **Manage** application, administrators can add, copy, import, export, rename, delete, archive, and restore elections created in the Verity system. The Manage application is available only on server workstations (see page 55).

accessing the Manage application



► From the Verity Home page, click the **Manage** tile.

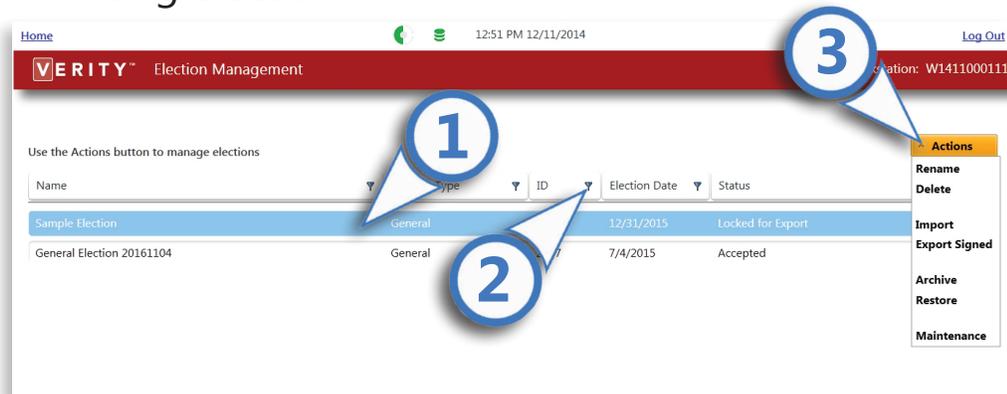
The Manage application is context-sensitive, meaning the management features available on each Verity workstation will vary depending on the Verity application installed. For instance: on a workstation equipped with Verity Data, you can add a new election; on a Verity Count workstation, you can import a signed election export.

You will use the Manage application throughout the election process to manage the transfer of the election database from one Verity workstation to another; each step will be covered in this guide in the appropriate sequence.

the Manage application, *continued*

using the Manage application

1 Clicking an election name from the list selects an existing election.



2 Clicking one of the filter icons  in one of the column headers filters the list by category.

3 Clicking **Actions** allows you to choose a desired action for the selected election. Available actions vary depending on the applications installed on the workstation. Actions that may be available are listed and described below:

- ▶ **Add:** (*Data/Build workstations*) Adds a new election to the Election Management screen.
- ▶ **Copy:** (*Data/Build workstations*) Creates a new election, in Open status, from the copied election. The new election will have a different Election ID.
- ▶ **Rename:** (*all workstations*) Renames the selected election. The election ID does not change.

the Manage application, *continued*

using the manage application, *continued*

- ▶ **Delete:** (*all workstations*) Removes the selected election from the election list and the workstation or network.
- ▶ **Import:** (*Data/Build workstations*) Imports an election. May be used for integration with a third-party system.
- ▶ **Export:** (*Data/Build workstations*) Exports an election. Exported elections may be used for integration with third-party systems. An exported election cannot be imported on a Relay, Central or Count workstation (a signed election export is required, see below).
- ▶ **Import Signed:** (*Relay, Central and Count workstations*) Imports a signed election export from a Verity Build workstation.
- ▶ **Export Signed:** (*Data/Build workstations*) Signs and exports the finished and accepted election. Signed election exports are imported on Relay, Count and Central workstations.
- ▶ **Archive:** (*all workstations*) Creates an archival copy of the selected election on an inserted removable USB media. The election status does not change.
- ▶ **Restore:** (*all workstations*) Restores an archived election without changing the election status. An archive can be restored only for the same type of system on which the archive was created (e.g., an archive from a Central system cannot be restored on a Count system).
- ▶ **Maintenance:** (*all workstations*) Runs a database optimization program to ensure that Verity runs quickly and efficiently.

best practices: archiving elections

It is important to archive your election in Verity regularly to provide protection against the loss of important data in the event of damage to the computer hard drive. In addition, archiving your election regularly provides a convenient method of restoring previous states of an election so that changes can be made if necessary. Using the Manage application, you can archive any election in its current state to removable USB media, and restore the archived version if needed.

NOTE: *Archives can only be restored on the same type of system they were created (e.g. a Central archive cannot be restored on a Count workstation).*

An election can be archived at any time. Examples of *some* key archive points are noted below:

- ▶ Before importing election data in Data
- ▶ Before an election changes status:
 - Before Locking an election for export in Data
 - Before Accepting an election in Build
- ▶ After Accepting an election in Build
- ▶ Before performing Manual Vote Recording in Count
- ▶ After completing tabulation in Count

the Manage application, *continued*

archiving elections in the Manage application

1 Open the Manage application.



2 Insert a removable USB media device into an available port on the workstation.

The screenshot shows the VERITY Election Management application interface. At the top, there is a red header bar with the VERITY logo and "Election Management" text. Below the header, there is a navigation bar with "Home" and "Log Out" links. The main content area displays a table of elections. A blue callout bubble with the number "3" points to the "Sample Election" row in the table. Another blue callout bubble with the number "4" points to the "Actions" menu, which is open and shows options: Rename, Delete, Import, Export Signed, Archive, Restore, and Maintenance.

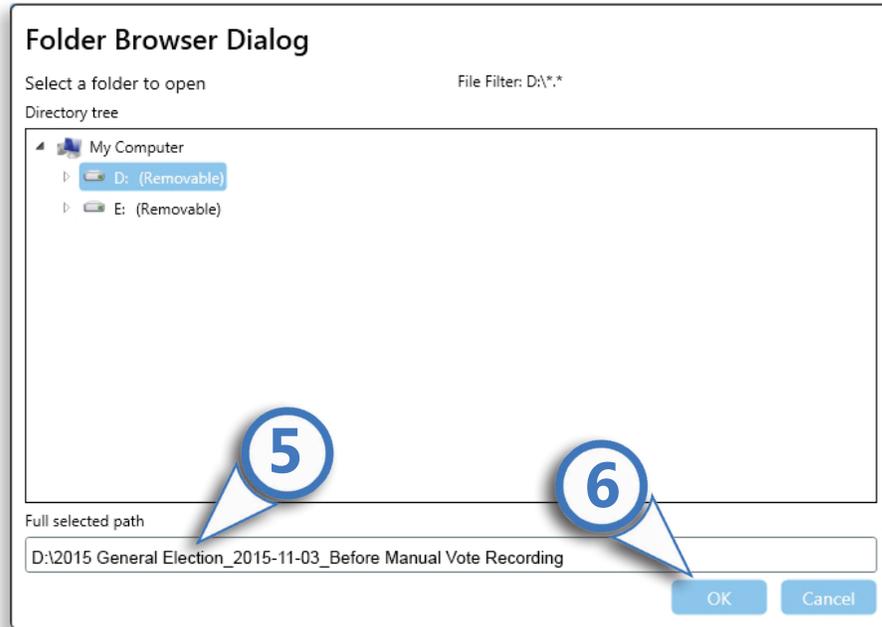
Name	Election Type	ID	Election Date	Status
Sample Election	General	19193	12/31/2015	Locked for
General Election 20161104	General	2967	7/4/2015	Accepted

3 Select the election to be archived.

4 Under the Actions menu, select **Archive**.

the Manage application, *continued*

5 Browse to the location of the removable media where you would like to save the file.



6 Click **OK**. The election will be saved in its current state in the location you have chosen.

7 Label the USB media clearly with the election name, date, and election status.

the Manage application, *continued*

restoring an archived election

To restore an archived election, the same election cannot already exist in the Manage application.

NOTE: *Archives can only be restored on the same type of system they were created (e.g. a Central archive cannot be restored on a Count workstation).*

- 1** Open the Manage application.
- 2** Insert the removable USB media containing the archived election to be restored.
- 3** Under the Actions menu, select **Restore**.
- 4** Browse to the location on the removable USB media and select the archive folder.
- 5** Click **OK**. The archived election now appears in the Manage application.
- 6** To load the archived election, select the election in the Manage application, and then click **Open**.

the Manage application, *continued***maintaining the election database**

The Maintenance operation optimizes the database so Verity can run more efficiently. To run the Maintenance operation, follow the steps below:

NOTE: *If user workstations are networked, ensure that all users are logged out of Verity client workstations before running the Maintenance operation. If a user is not logged out of Verity, the Maintenance operation will not complete its tasks.*

- 1** Open the Manage application.
- 2** Under the Actions menu, select **Maintenance**. A Warning dialog window displays.
- 3** Click **Yes** to launch the Maintenance program.

NOTE: *A rotating progress wheel may display while Verity performs maintenance, depending on how long the operation takes.*

the Disk and RAID indicators

At the top center of the Verity workstation screen are two icons, the Disk icon (A) and the RAID icon (B).



the Disk icon

In configurations with only a single workstation, this icon represents the available hard drive space on that workstation. In configurations with two or more networked workstations, the icon represents the hard drive space on the server, or primary, workstation. If server hard drive space is low, archival of older election data may be required before creating or editing a new election.



More than 20% of the free hard drive space remaining.



WARNING: remaining hard drive space is limited to between 5%-20%. Archive and delete some elections to increase available free space.



WARNING: remaining hard drive space is less than 5%. You must archive and delete some elections before continuing to use the software.



Unable to determine the amount of free disk space. Please contact Hart Support.

the Disk and RAID indicators, *continued*

the RAID icon

Hovering the mouse over the RAID icon displays the status of the RAID array on the workstation. RAID is an acronym for Redundant Array of Independent Disks; Verity utilizes RAID technology to store data on the server using multiple disk drives to provide redundancy and improve performance. The RAID icon indicates whether both independent drives are functioning properly, and whether they are synchronized. If the RAID drives become desynchronized, Verity will automatically rebuild them. If one drive fails, you can continue to use the system, however you will need to contact Hart for a replacement.



The hard drive array is working correctly



WARNING: The hard drive array is repairing itself. The system may run slowly while it is being repaired.



WARNING: One of your hard drives is not functioning. Please contact Hart Support.



Unable to determine the status of the hard drive array. Please contact Hart Support.

the Users application



The **Users** application allows an administrator-level user to add users and define user roles, disable or remove users, and manage user rules. Administrators can also manage user passwords, and users can update their own passwords. To open the Users application, click the **Users** tile on the Verity home screen.

adding a user and defining user roles

1 Click Add. ▼

Home 12:52 PM 12/11/2014 Log Out

VERITY™ User Management Workstation: W1411000111

Manage users with the grid below.
Expand a user entry to assign roles.

Username ▼	Set New Password ▼	Account Locked? ▼
user		<input type="checkbox"/>

Set rules that apply to all users:

- Lock accounts after failed login attempt(s)
- Allow locked accounts to login after minute(s)
- Force password change every month(s)
- Log idle user out after minute(s)

Password complexity rules

- Must contain at least one upper-case character
- Must contain at least one numeric digit
- Must contain at least one special character
- Must be at least 6 characters long

1

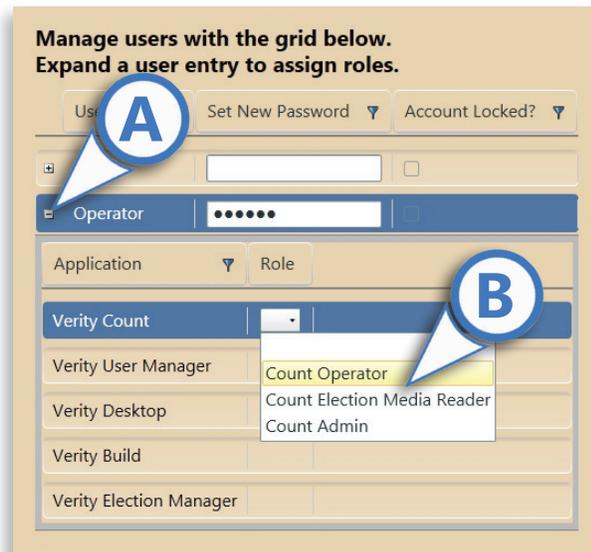
Add Delete Save

the Users application, *continued*

3 Type a User Name (A) and Password (B). ▼



4 To define user roles, expand a user profile by clicking the + (A) and use the drop down menu to assign the user a role for each of the Verity applications (B). For a description of each type of user role, see page 47. ►



5 Click **Save** in the bottom right corner.

user roles in Verity

The specific user roles available vary for each Verity application. Each user role has specific privileges, or abilities, within that application. Below are the user roles available for each application, and the privileges available to each user role. In addition to performing the actions themselves, Administrator users can also authorize actions not available to other user roles. For example, an Administrator can give on-the-spot authorization for an Operator user to perform Manual Vote Recording in Count.

Verity Data user roles

- ▶ **Viewer:** Can view all of the screens in Data, print reports, and print ballot previews; Viewers cannot change election data.
- ▶ **Operator:** Can perform all Viewer operations and add, change, and delete election data.

Verity Build user roles

- ▶ **Viewer:** Can open elections, preview ballots, and print reports for proofing purposes. Viewers cannot modify content, configurations, or elections.
- ▶ **Media Creator:** Can perform all Viewer tasks. In addition, can create Keys and vDrives, and print ballots.
- ▶ **Operator:** Has full access to Verity Build; only one Operator can open a given election at a given time.

user roles in Verity, *continued*

Verity Central user roles

- ▶ **Viewer:** Can open elections and tasks, and print and export reports. Cannot modify content, configurations, or elections.
- ▶ **Resolution Board:** Can open and view ballots with voter intent issues to determine validity, resolve ballots, and run reports.
- ▶ **Operator:** Has full access to Verity Central, including the ability to review ballots with voter intent issues, change election status, restore elections, and perform all tasks for ballot scanning and generating reports.
- ▶ **Administrator:** Has all of the abilities of Operators, plus additional access for administrative setup and closing polls.

Verity Count user roles

NOTE: *In Count server/client configurations, no more than one Administrator or Operator can be logged in to a given Task at the same time.*

- ▶ **Election Media Reader:** Can open elections and tasks to read vDrives.
- ▶ **Operator:** Can open and manage elections and tasks, generate reports, and update polling place data, and precincts. Users can import and export data, resolve ballots, and access the audit dashboard. Users can manually record votes only with Administrator authorization.
- ▶ **Administrator:** Users have unrestricted access to all aspects of Verity Count. Can manually record votes, access all aspects of reports and the auditing dashboard, and import and export data.

user roles in Verity, *continued*

Verity Relay user roles

- ▶ **Operator & Administrator:** Has full access to all functions in Relay. While Relay has two roles, the access privileges are identical.

disabling a user account

1 Check the box next to the user name, under the **Account Locked** column.

2 Click **Save** in the bottom right corner.

**Manage users with the grid below.
Expand a user entry to assign roles.**

Username ▼ Set New Password ▼ Account Locked? ▼

Application	Role
Verity Count	Count Admin
Verity User Manager	UserManager Admin
Verity Desktop	Desktop Admin
Verity Build	Build Operator
Verity Election Manager	ElectionManager Admin

NOTE: *this feature may be useful if an account will be used again, but only at specific times.*

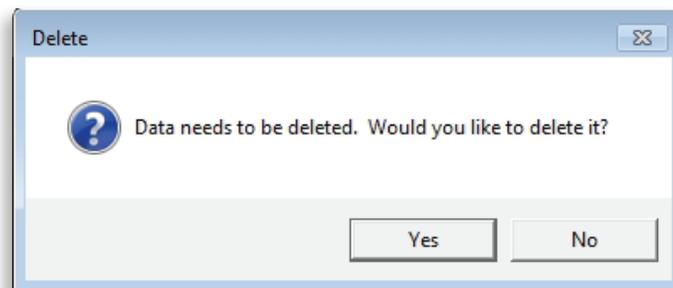
the Users application, *continued*

removing a user account permanently

- 1 Click a user account to select it. ▼
- 2 Click **Delete** on the bottom of the screen. ▼



- 3 Click **Yes** to confirm. ▼



- 4 Click **Save** in the bottom right corner.

the Users application, *continued*

setting rules that apply to all users

- 1 Set the number of failed login attempts before the account is locked.
- 2 Set the period of time a locked account will remain locked.
- 3 Set the frequency with which passwords must be changed.
- 4 Set the idle user log out time.
- 5 Set rules regarding password complexity.
- 6 Click **Save** in the bottom right corner.

1 **Set rules that apply to all users:**

- Lock accounts after failed login attempt(s)
- Allow locked accounts to login after minute(s)
- Force password change every month(s)
- Log idle user out after minute(s)

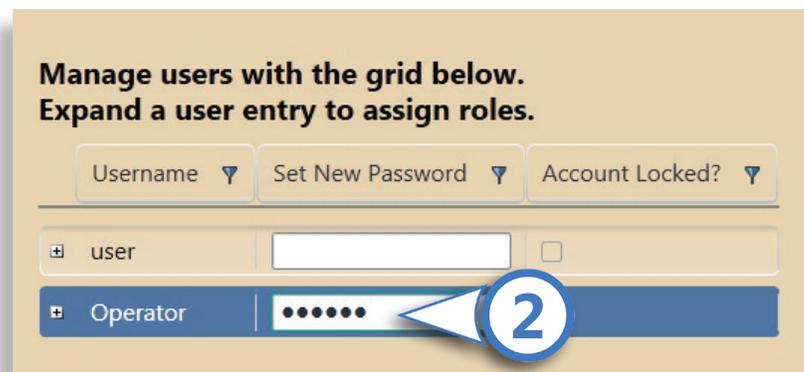
4 **Password complexity rules**

- Must contain at least one upper-case character
- Must contain at least one numeric digit
- Must contain at least one special character
- Must be at least 6 characters long

5

the Users application, *continued***changing user passwords**

- 1 Click in the password field next to the user name.
- 2 Type the desired password.



- 3 Click **Save** in the bottom right corner.

best practices: user passwords

- ▶ Passwords should contain at least 6 characters.
- ▶ Passwords should contain both numbers and letters.
- ▶ Passwords should contain both uppercase and lowercase letters.

managing passwords in Verity

The Verity voting system requires the use of passwords and passcodes to ensure security throughout the election definition, voting, ballot processing, and tabulation processes. In addition to the user passwords required to access the Verity software applications discussed on the previous pages, there are a number of other passwords and passcodes that the system administrator must create and manage. For further information on Verity password management, see the Verity Knowledge Base article *Verity Password Management*.

- ▶ In Build, you must create separate device passcodes for administrators, maintenance and warehouse personnel, and poll workers. These passcodes allow you to manage the ability of staff to access different menus and functions on the devices themselves. (See page 108.)
 - **Poll worker passcodes** give access to poll workers to create access codes, print reports, and perform certain other actions related to the voting process.
 - **Maintenance passcodes** give access to warehouse personnel and technical support personnel to predefine and calibrate devices, and change certain device settings.
 - **Administrator passcodes** allow administrators to change certain device settings, such as changing ballot rules.
- ▶ In addition, you will create additional device passcodes for opening, suspending, and closing polls for each voting type in the election. (See page 108.)

managing passwords in Verity, *continued*

- ▶ Finally, you must create and manage the passcodes associated with the Verity Key, including an administrator passcode for the Key itself, and device and application passcodes. (see page 132)
 - The Key administrator passcode is required to write the Key for each election. It cannot be recovered if forgotten.
 - Device and application passcodes are used, in conjunction with the physical Key itself, to authorize certain actions, such as predefining devices, and importing elections exported from the Build workstation.
 - A complete list of actions requiring the use of the Verity Key is found on page 19.

It is important to carefully manage these passwords and passcodes to ensure that the authorized personnel know their required passcodes when needed. Log all passcodes in a secure location and limit access.

It is important to note that device passcodes can be unique, or shared across functions (e.g., you can use the same passcode for opening polls across all voting types, or create a unique passcode for each). You can create a new set of passcodes for each election, if desired. Remember that creating unique codes increases security, but also requires more careful management.

networking and servers

Depending on your jurisdiction's particular implementation, you may have one or more networked workstations for each of the Verity software applications*. For example, you could have a Build server workstation with a networked Build client workstation. A server-client configuration consists of two or more workstations for a single application, with all data for that application stored on the server workstation. This allows multiple users to work with the application simultaneously.

However, there are restrictions on the number and type of users (administrators, operators, etc.) that can access a networked setup simultaneously. For example, in a networked Count configuration, there can be only one Administrator or Operator user logged in at any given time, yet there can be multiple Media Reader users logged in simultaneously. These restrictions reflect the software privileges associated with each user role. For a description of the software privileges accorded to each user role, see page 47. Examples of possible network configurations are given on the following pages.

**Verity Build, Central and Count workstations all support server-client configurations; Verity Relay does not.*

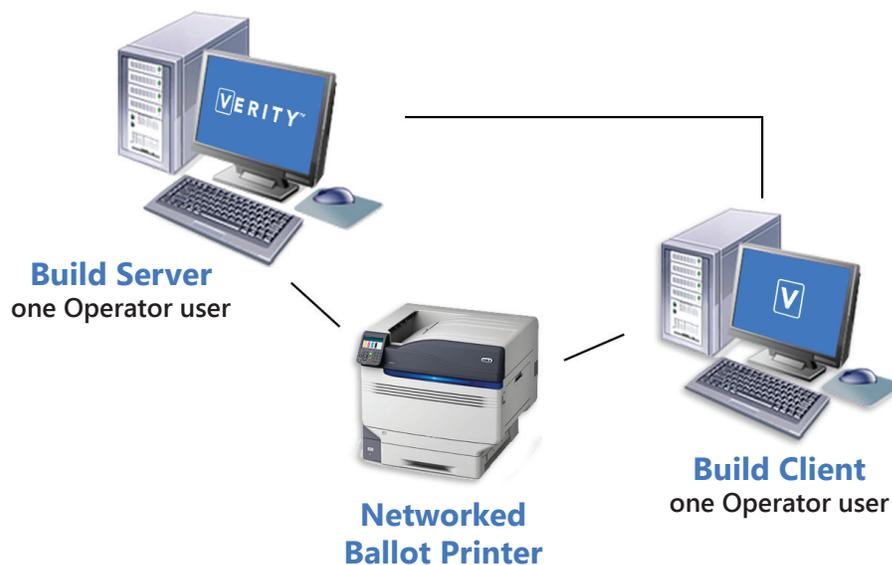
sample network configurations

The configurations illustrated below are samples only; your jurisdiction's configuration may vary, and the below diagrams are not intended to illustrate all possible configurations.

NOTE: *an individual user can only be logged into one workstation at a time.*

sample configuration #1

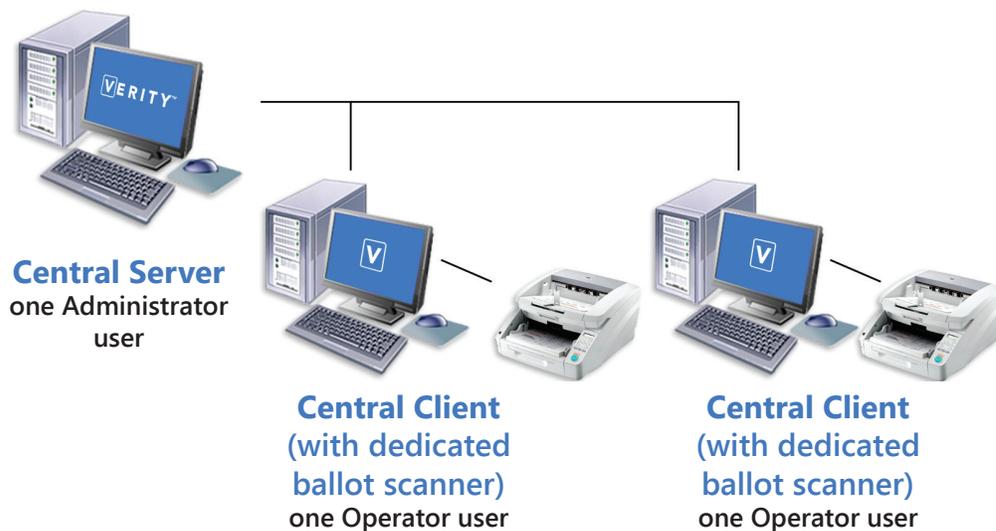
Below is a sample configuration with one Verity Build server and one Build client, with a networked ballot printer. In the sample configuration shown, two Operator users can be logged in simultaneously. Print jobs can be sent from either workstation.



sample network configurations, *continued*

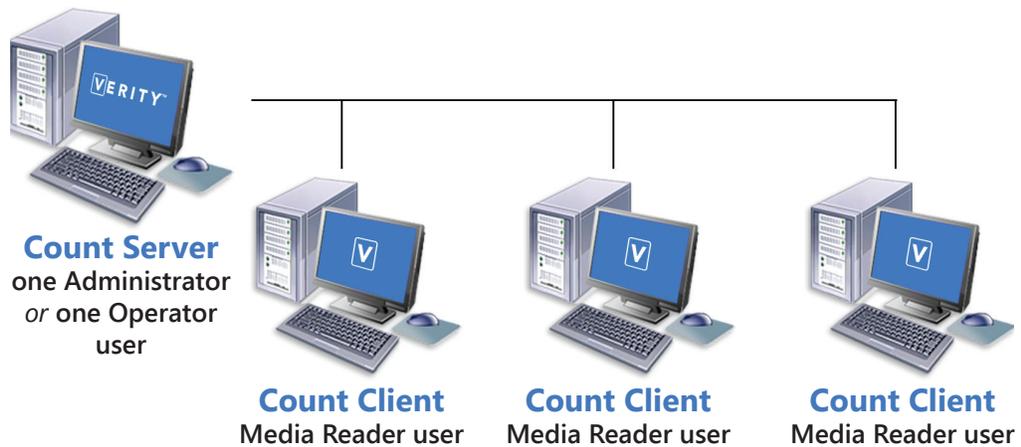
sample configuration #2

Below is a sample configuration with one Verity Central server and two Central clients, each with a dedicated ballot scanner. In the sample configuration shown, one Administrator user and up to two Operator users can be logged in simultaneously.



sample network configurations, *continued***sample configuration #3**

Below is a sample configuration with one Verity Count server and three Count clients. In the sample configuration shown, one Administrator or Operator user and up to three Election Media Reader users can be logged in simultaneously.



shutdown procedure for Verity server-client networks

The procedures to use to execute a controlled shut down and restart for any Verity Computer System (Data, Build, Central, or Count) are straightforward. Click the Shutdown button on the Verity home screen of the workstation to ensure smooth power down and protection of data.



Verity computer systems do not require power down or power up of peripherals (scanners or printers) in any kind of order. However, if you need to restart a workstation that is connected to other workstations as part of a server-client network, always use the following procedure to restart the entire network:

Step	Server	Clients
1 Problem is identified that requires one or more stations to be rebooted		
2 Shut down all of the client workstations		
3 Shut down the server workstation		
4 Power on the server workstation, and wait for it to boot fully		
5 Power on the client workstations		

verity **build**



version 2.X

verity build

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1

getting started

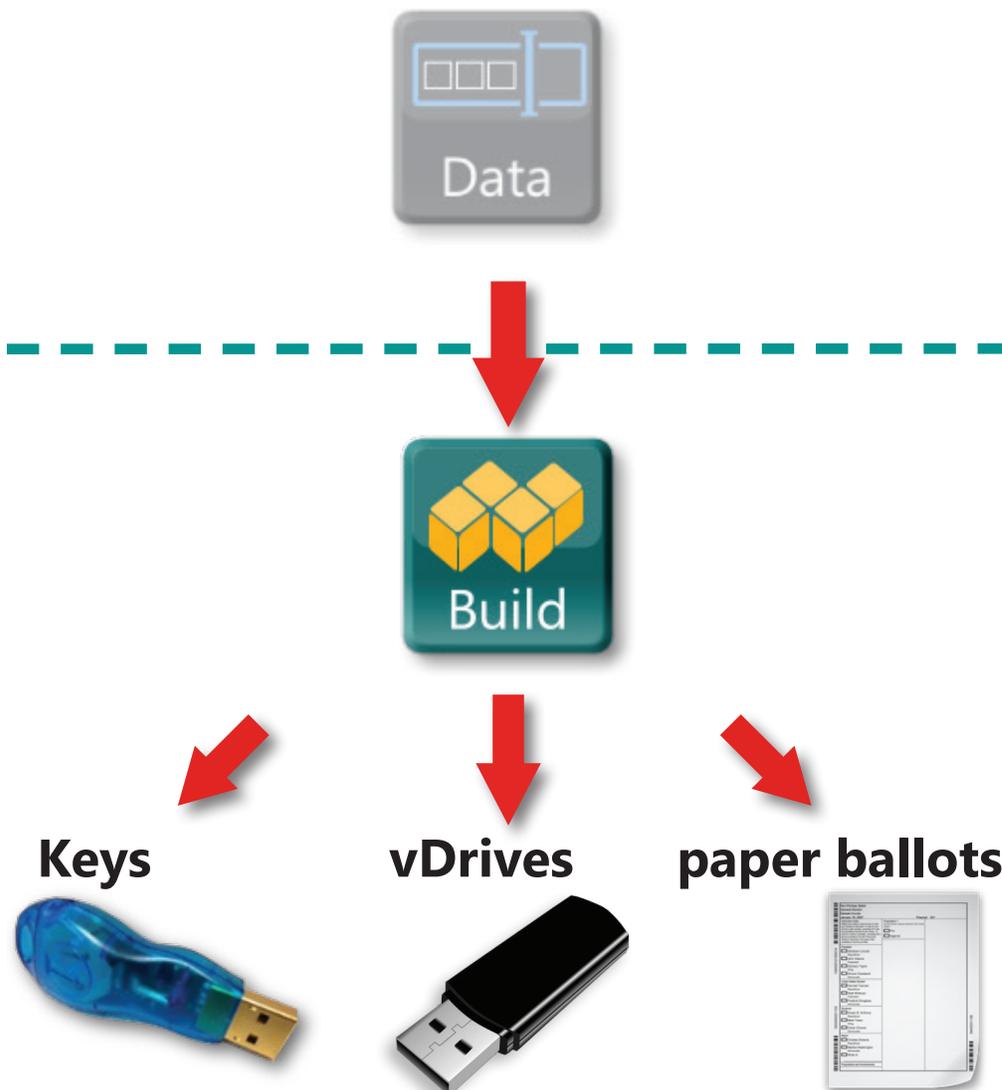
verity build: an overview



In Verity Build, you will proof your ballot data and ballot layout, configure the settings for your election, print ballots, write vDrives, and write Verity Keys. Ballot data and layout are managed in Verity Data; once an election has been Locked in Verity Data (on the same workstation), it is available to be opened in Verity Build.

verity build: an overview, *continued*

Verity Build workflow



importing an election on the Build workstation *(external source)*

To open an election in Verity Build, the election must first exist in the Manage application on that workstation (*Manage is available only on server workstations, see page 55). **If the election you wish to open was created in Verity Data (on the same workstation), you will skip these steps - the election will already be available in Manage.**

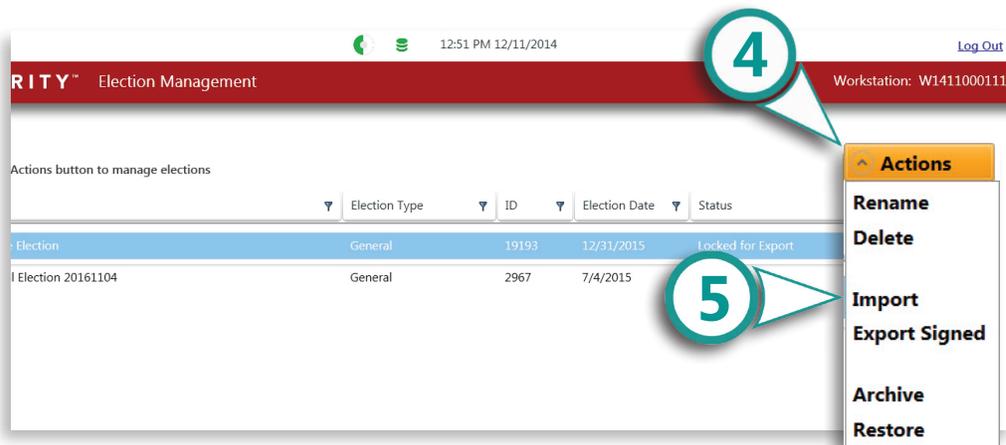
NOTE: *Before creating or importing any elections, you can first set basic election preferences for Build, if desired (see page 74). These preferences will be applied as defaults to any imported election.*

- 1** Insert the removable media (USB) containing the election into an available USB port on the Build workstation computer.
- 2** If you have already launched Verity Build, click the **Home** link in the upper left corner to return to the Verity Desktop.
- 3** On the Verity home screen, click the **Manage** tile.



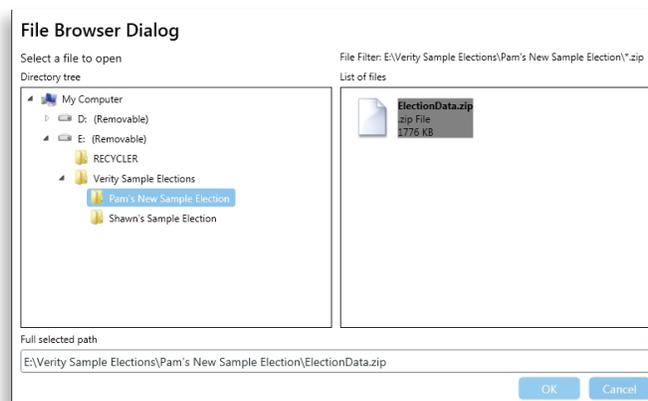
importing an election on the Build workstation, *continued*

4 In the Manage application, click **Actions**.



5 Select **Import** from the Actions drop-down menu.

6 Browse to the location of the removable media and select the election to import. Click **OK**.



importing an election on the Build workstation, *continued*

- 7 Confirm the election to be imported is correct, and then click **Yes**.

Election Description :Sample Election
Election ID:19193
Election Date :12/31/2015 12:00:00 AM

Election Totals		
Precincts	.....	5
Districts	.....	4
Ballot Texts	.....	0
Contests	.....	7
Options	.....	32
Audio	.....	82
Languages	.....	1

Is this the election you would like to import ?

- 8 Click **Home** in the upper left corner to return to the Verity Home screen.

[Home](#)

VERITY™ Election Management

Use the Actions button to manage elections

Name Election T

importing an election on multiple Verity Build server workstations

You may have multiple Build client workstations connected to the same Build server workstation, in order for you to more efficiently accomplish tasks such as printing ballots or creating vDrives. However, it is also possible (though less common) to have multiple Build *server* workstations.

You should never import an election from Verity Data onto multiple Verity Build server workstations. Doing so may result in elections (and election assets like vDrives and Keys) that share an Election ID, but have different security keys (which are generated in Build). In this case, the elections won't be compatible with one another, but they will look like they are - meaning you may end up with vDrives that won't read into Count and/or Keys that won't work with your vDrives. If you absolutely must put the same election on multiple Build server stations, you may do the following:

- 1 Import** your election into a single Build server
- 2 Archive** the election on that server workstation
- 3 Restore** the archived election onto your other Build servers

The Archive/Restore process carries the security keys with the election, so the issue will be avoided.

vDrive and ballot identifiers

Note that even if the election is deployed to Build using the Archive/Restore process, there is still a danger that vDrives and ballots can be created with duplicate identifiers.

To avoid this scenario, you should only print ballots and create vDrives from a single Build server. Verity Keys can be safely created from multiple servers.

about election status

The status given for each election in the Manage application indicates at what point the election is in the election definition process.

- ▶ **Open for Editing:** The election is in the process of being created and can be edited in Verity Data.
- ▶ **Locked for Export:** The election has been locked from further edits in Verity Data and is now ready to open in Verity Build.
- ▶ **Accepted:** The election has been proofed in Verity Build and you can now print ballots and create vDrives and Keys. Election is now ready for export to Verity Relay, Central or Count.

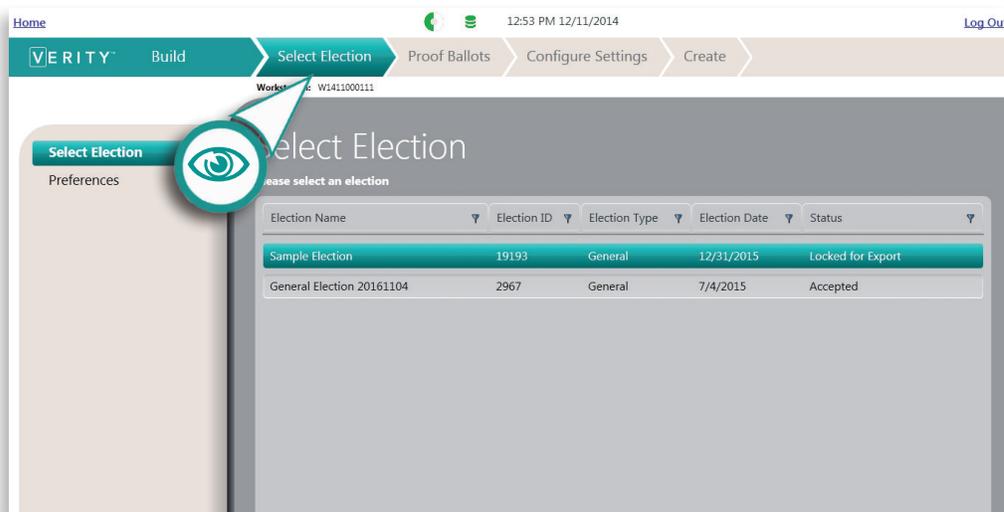
Verity Relay, Central, and Count require a *signed* election export from the Build workstation (the process for creating a signed export is discussed on page 137). The act of creating a signed export on the Build workstation creates the election definition. Importing a signed export on a separate Verity Relay, Central or Count workstation requires the user to insert a Verity Key for that election (created in Build) and also enter the Verity Key application password.

opening the Build application

Log into the Verity workstation. On the Verity home screen, click the Build application tile to open Build.



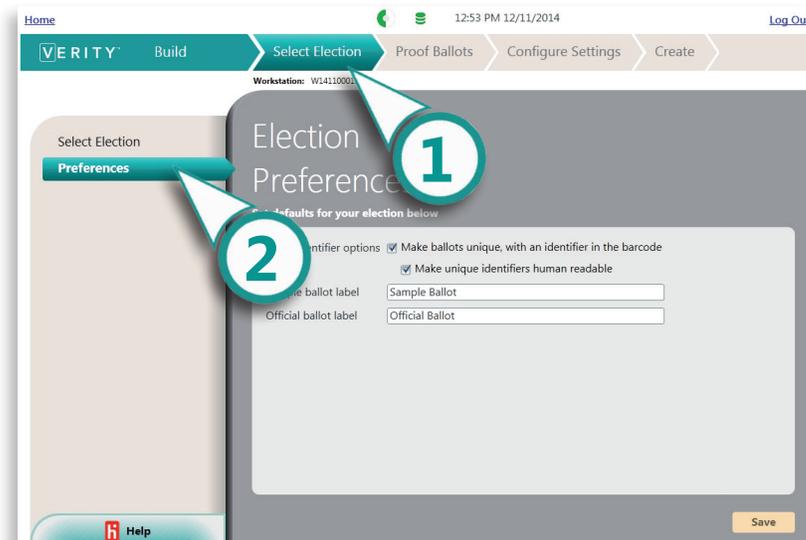
The Build application contains four chevron-shaped tabs: **Select Election**, **Proof Ballots**, **Configure Settings**, and **Create**.



setting preferences

The **Preferences** menu allows you to set default preferences for all elections in Verity Build. You can set preferences at any time; however, preferences set here only affect future elections that do not yet exist in Manage. The first time you open Build you should set preferences *before* creating/importing your first election onto the workstation. You can change settings for an election you have already created/imported on the Build workstation under Configure Settings (page 102).

- 1 Click the **Select Election** tab.
- 2 Select the **Preferences** menu.



setting preferences, *continued*

3 Set your preferences for unique identifiers on ballots. For details on unique identifiers, see page 126.

A) Check the box to include unique identifiers on your ballots, if desired.

B) Check the box to make unique identifiers human-readable, if desired.

NOTE: *a human-readable unique identifier will include numerals in addition to a barcode.*

Home 12:53 PM 12/11/2014 Log Out

VERITY Build Select Election Proof Ballots Configure Settings Create

Workstation: W1411000111

Select Election Preferences

Election Preferences

Set defaults for your election below

Ballot identifier options Make ballots unique, with an identifier in the barcode **3A**
 Make unique identifiers human readable **3B**

Sample ballot label

Official ballot label

Help Save

setting preferences, *continued*

4 Type your default label for sample ballots and for official ballots. This will appear in the header of the ballot.

5 Click **Save** to save your preferences.

Home 12:53 PM 12/11/2014 Log Out

VERITY Build Select Election Proof Ballots Configure Settings Create

Workstation: W1411000111

Select Election Preferences

Election Preferences

Set defaults for your election below

Ballot identifier options Make ballots unique, with an identifier in the barcode
 Make unique identifiers human readable

Sample ballot label

Official ballot label

Help Save

using on-screen help

Help is available on every screen of the Build application; it will contain information related to the current screen, including instructions, notes, and important information regarding the steps you must complete on that screen.

- 1 Click the tab labeled **Help** at the bottom left of the screen to expand the help tab. ▼

Home 12:53 PM 12/11/2014 Log Out

VERITY Build Select Election Proof Ballots Configure Settings Create

Workstation: W1411000111

Select Election

Preferences

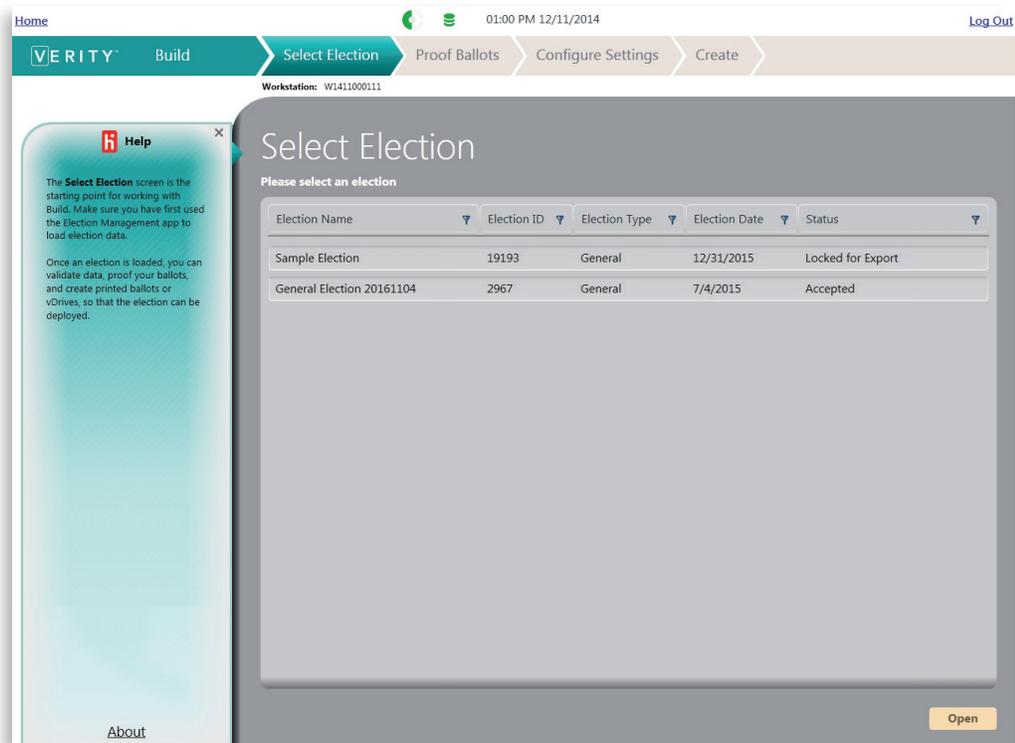
Please select an election

Election Name	Election ID	Election Type	Election Date	Status
Sample Election	19193	General	12/31/2015	Locked for Export
General Election 20161104	2967	General	7/4/2015	Accepted

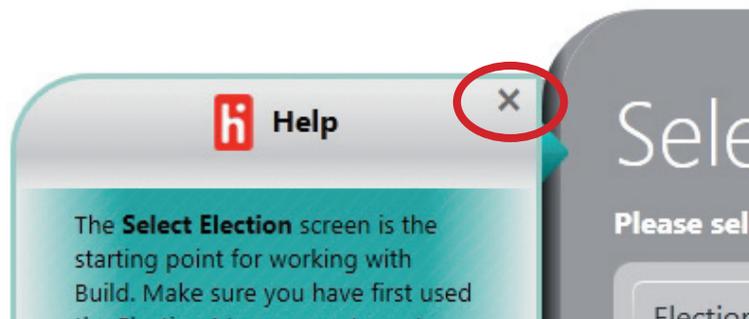
1 Help Open

using on-screen help, *continued*

- The help tab will display information about the current screen. ▼



- Click the **X** in the upper right corner to close the help tab. ▼



Build checklist: getting started

- 1** Log in to Verity.
- 2** Open Build and set default election preferences, if you have not already done so.
- 3** Insert the USB media containing the election exported from Data (or other election definition software) into an available port on the Build workstation.
- 4** Click Home to return to the Verity home screen.
- 5** Open the Manage application on the Build workstation.
- 6** Under the Actions menu in Manage, choose Import. Browse to and select the election on your removable USB media, and then click OK.
- 7** Click Home to return to the Verity home screen.



select election

the select election tab

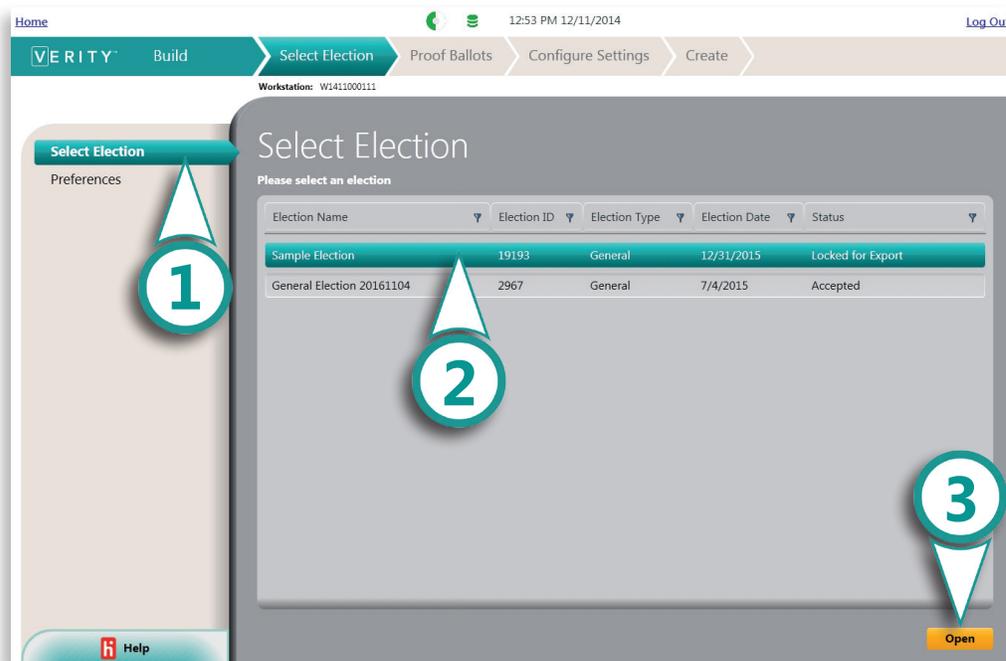


Under the **Select Election** tab, you will open the election created in Verity Data (or another election source) and adjust basic preferences for elections that you have not yet imported. The following menus are available in the Elections tab:

- **Election:** select and open the election you need to work with.
- **Preferences:** Set basic election preferences for Build.

selecting and opening an election

- 1 Select the **Select Election** menu.
- 2 Select the election you need to work with from the list.
- 3 Click **Open** in the bottom right of the screen.



setting preferences

The **Preferences** menu allows you to set default preferences for all elections in Verity Build. You can set preferences at any time, however preferences set here only affect elections that have not yet been imported in Manage; the first time you open Build you should set preferences *before* importing your first election onto the workstation. See page 74 for instructions on setting default preferences. You can change settings for an election you have already imported on the Build workstation under the configure tab (page 102).

multi-select functionality in Verity

Where multi-select functionality is allowed, the multi-select behavior follows standard Windows conventions:

- To select a range of items, select the first item, then hold down SHIFT while clicking the last item
- To select multiple individual items, hold down CTRL while clicking on each item
- To mark the check boxes on all selected items, press the space bar

Build checklist: the select election tab

- 1** Log in to Verity.
- 2** Open Build.
- 3** In the Select Election tab, select the election you need to work on from the list, and then click Open.
- 4** Under the Select Election tab, you can also review the default election preferences by selecting the Preferences menu, if desired. Changes made here will not affect elections that have already been imported in the Manage application.

3

proof ballots

the proof ballots tab

Build

Select Election

Proof Ballots

Configure Settings

Create

In the **Proof Ballots** tab, you will check election data for errors, proof ballot content and layout, print reports of ballot data for review, and proof audio recordings. The following menus are available in the Proof tab:

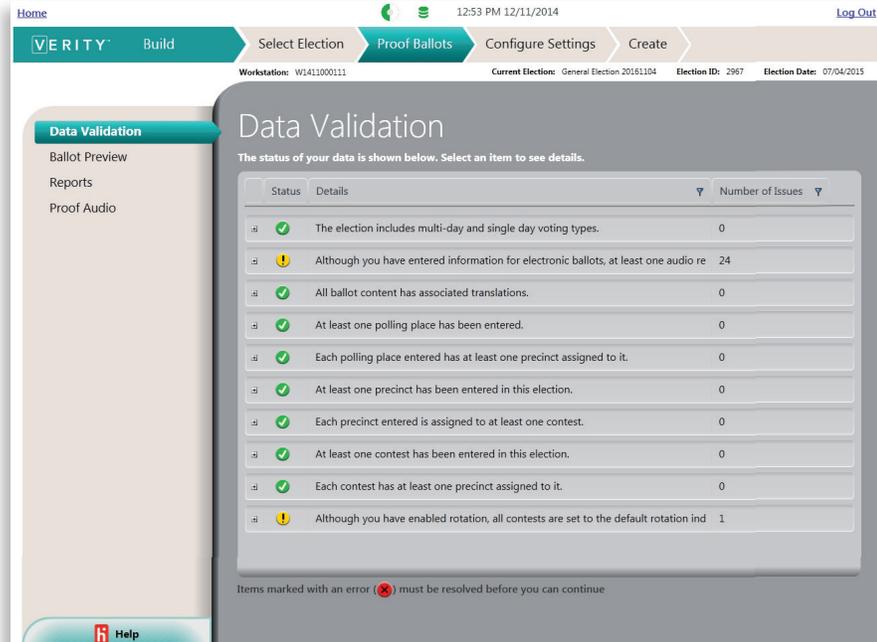
- **Data Validation:** view any problems with ballot data.
- **Ballot Preview:** preview each ballot style for content and layout.
- **Reports:** create reports used to proof the ballot data for errors.
- **Proof Audio:** listen to and proof audio recordings.

data validation

The **Data Validation** menu alerts you of any problems found with the ballot data. If errors are found, the election must be corrected and then re-imported into Build. Select an item from the list to view any validation issues.

Click the **+** symbol next to the item to view individual issues; the number of issues is indicated in the right-most column. Note the following indicators:

-  = Warnings. These items should be dealt with before proceeding, but are not required.
-  = Errors. These items must be resolved before you can continue.



Home 12:53 PM 12/11/2014 Log Out

VERITY Build Select Election Proof Ballots Configure Settings Create

Workstation: W1411000111 Current Election: General Election 20161104 Election ID: 2967 Election Date: 07/04/2015

Data Validation

Ballot Preview
Reports
Proof Audio

Data Validation

The status of your data is shown below. Select an item to see details.

Status	Details	Number of Issues
✓	The election includes multi-day and single day voting types.	0
!	Although you have entered information for electronic ballots, at least one audio re	24
✓	All ballot content has associated translations.	0
✓	At least one polling place has been entered.	0
✓	Each polling place entered has at least one precinct assigned to it.	0
✓	At least one precinct has been entered in this election.	0
✓	Each precinct entered is assigned to at least one contest.	0
✓	At least one contest has been entered in this election.	0
✓	Each contest has at least one precinct assigned to it.	0
!	Although you have enabled rotation, all contests are set to the default rotation ind	1

Items marked with an error (X) must be resolved before you can continue

Help

ballot preview

In the **Ballot Preview** menu, you will proof each ballot style for content and layout. The ballot preview window contains three sections:

- (A) The **Select a ballot** panel
- (B) The ballot preview image
- (C) The ballot preview toolbar

The screenshot shows the VERITY Ballot Preview interface. At the top, there is a navigation bar with 'Home', 'Build', 'Select Election', 'Proof Ballots', 'Configure Settings', and 'Create'. The current election is 'Sample Election' with ID '39193' and date '12/31/2015'. The workstation ID is 'W1411000111'. The interface is divided into three main sections:

- (A) Select a ballot panel:** This panel on the left allows users to select a ballot style. It includes a 'Data Validation' section, a 'Ballot Preview' section, and a 'Proof Audio' section. Below these is a table of ballot styles:

Precinct	Style
101-A	1
101-B	2
102	3
103	3
104	1
- (B) Ballot preview image:** This section displays a sample ballot for 'Sample County, Sample State' on 'December 31, 2015'. It includes instructions for voters and lists candidates for the 'United States Senate' and 'President and Vice-President of the United States'. The ballot is labeled 'Page 1 of 2'.
- (C) Ballot preview toolbar:** This section on the right contains various controls: search icons, 'Stub' and 'Fold lines' buttons (both set to 'OFF'), line height controls for 'Line 1', 'Line 2', and 'Line 3' (all set to '0"'), an 'Export' button, and a 'Print' button. A note states: 'Fold lines cannot be less than 3 inches from the top or bottom of the ballot.'

! IMPORTANT: You should proof all ballot styles for content and layout. A ballot style consists of a ballot format containing a specific subset of contests. You should also proof ballots by language & ballot type (paper/electronic).

ballot preview, *continued*

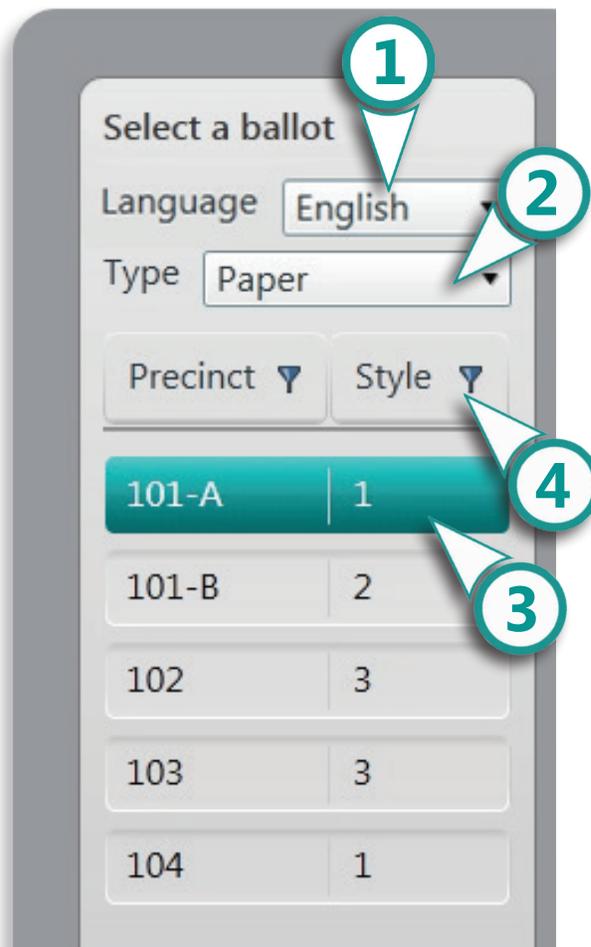
selecting a ballot

- 1** In the **Select a ballot** panel, select the language that you want to proof (if applicable).
- 2** Select the ballot type to proof (paper or electronic).

NOTE: *In Closed Primary Elections, you may also select ballots by Party.*

- 3** Select the precinct or ballot style to proof. You should proof at least one ballot of each ballot style, in all languages and ballot types.

- 4** Click the filter icon  in a column header to filter by category.



ballot preview, *continued*

the ballot preview window

The ballot preview window displays the current page of the ballot whose language, ballot type, and ballot style you have selected.

- ▶ The green sliders on the right and bottom allow you to adjust the view when zoomed in.

Sample Election
December 31, 2015
Sample County, Sample State

Preview Ballot
12/11/2014 12:54:02

Sample County Ballot

Precinct 101-A
Page 1 of 2

Please use a blue or black ink pen to completely fill in the box next to your choice. To vote for a write-in candidate, fill in the box next to the words "Write-in," and write in the name of your candidate on the line underneath the box.

<p>Straight Party</p> <p><input type="checkbox"/> Whig Party</p> <p><input type="checkbox"/> Historical Party</p> <hr/> <p>President and Vice-President of the United States</p> <p><i>Vote for One Pair</i></p> <p><input type="checkbox"/> Joseph Barachi and Joseph Hallaren Whig</p> <p><input type="checkbox"/> Adam Cramer and Greg Vuocolo Historical</p> <p><input type="checkbox"/> Daniel Court and Amy Blumhardt</p>	<p>United States Senate</p> <p><i>Vote for One</i></p> <p><input type="checkbox"/> Dennis Weiford Whig</p> <p><input type="checkbox"/> Lloyd Garriss Historical</p> <p><input type="checkbox"/> Sylvia Wentworth-Farthington</p> <p><input type="checkbox"/> John Hewetson</p> <p><input type="checkbox"/> Write-in: _____</p>
---	---

Read Both Sides of the Ballot

ballot preview, *continued*

the ballot preview toolbar

A) Use the **Magnifying Glass** buttons to examine the ballot in greater detail.

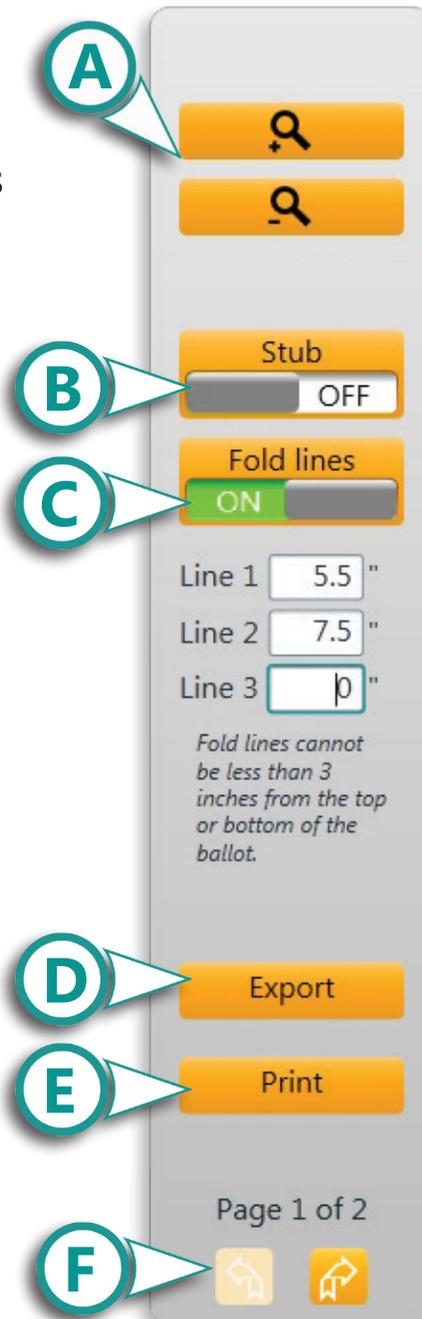
B) **Stub** slider allows you to see the ballot stub.

C) **Fold Lines** slider allows you to see where fold lines appear on the ballot. Best practices for fold line placement can be found on page 90. Change fold line positioning by entering values in the boxes below.

D) Click **Export** to export the page preview image to file (PDF).

E) Click **Print** to print the page image.

F) Use the **Page** buttons to view each page of the ballot; be sure to proof all pages.



best practices: fold lines

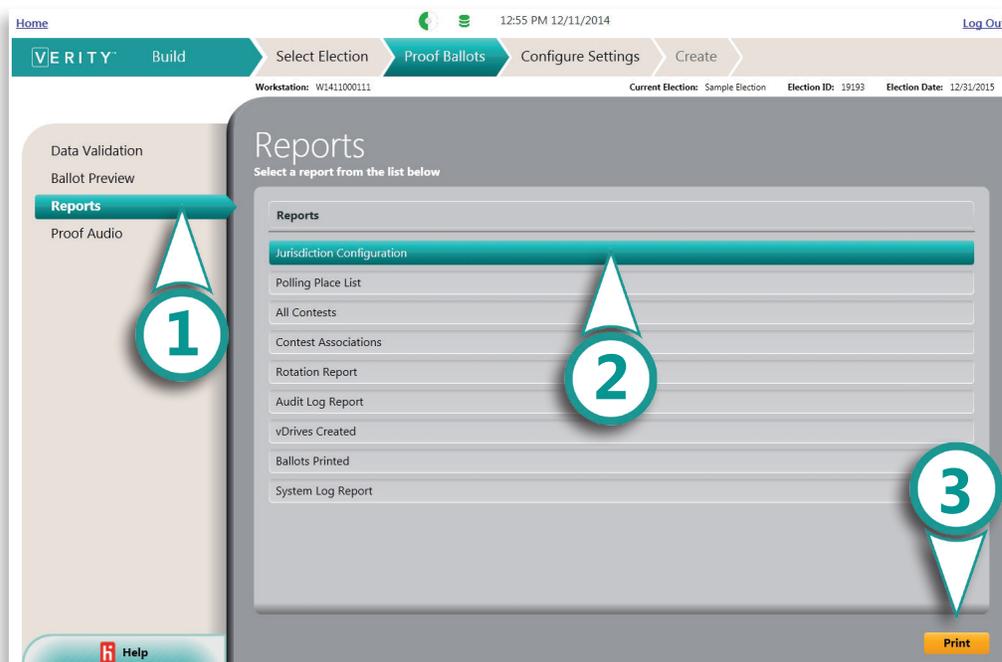
Consider the placement of fold lines when laying out your ballot.

- Don't fold ballots through option boxes and barcodes as dirt may accumulate in the fold.
- Use the minimum number of folds required to fit the ballot into its envelope.
- Be familiar with all of your ballot styles. Some may require a different type of fold than others.
- Avoid excessive folding and creasing.
- Avoid folding against the grain of the paper.
- Avoid any folds occurring just above or below a ballot stub perforation.

reports

The **Reports** menu contains a number of reports that can be used to proof the ballot data for errors. Available reports are listed on page 93.

- 1 Select the **Reports** menu.
- 2 Select the desired report from the list.
- 3 Click **Print**.



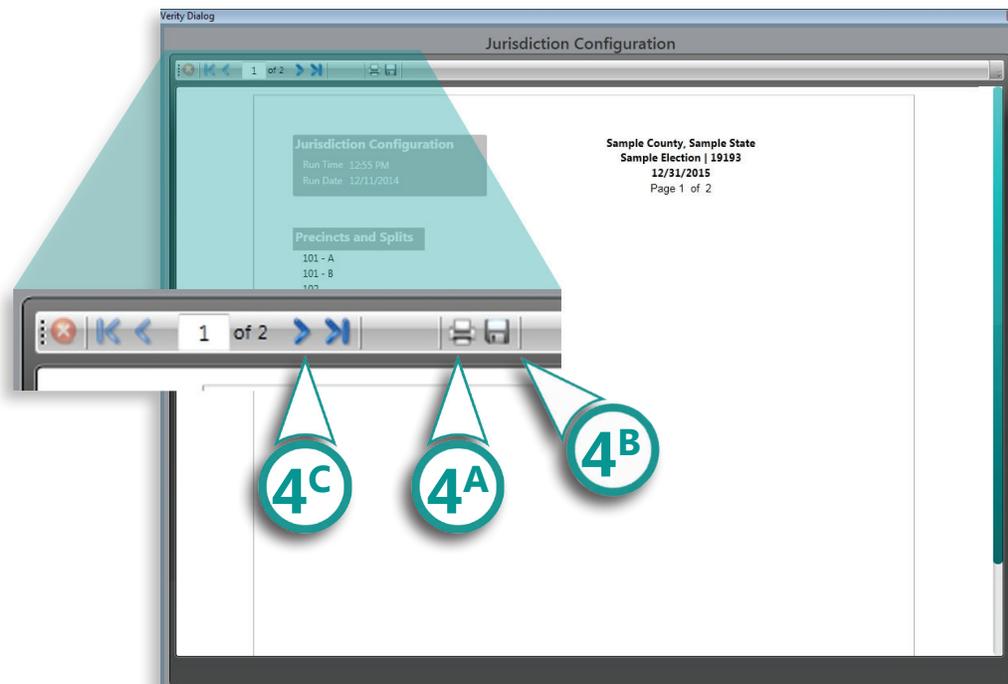
reports, *continued*

4 View, Print or Save the report.

A) To Print, click the Printer icon.

B) To Save to file, click the Disk icon.

C) You can view additional pages of the report using the blue arrow buttons.



available reports: Build

The following reports are available in Build; the contents of each report are listed below. These reports cannot be deleted or edited by the user. All Build reports contain the following information in their header:

- Report Title
- Election Title
- Election Date
- Election ID
- Jurisdiction Name
- Date and time the report was generated

Audit log report

The Audit log report is a comprehensive log of all activity that has occurred in the Build application on that workstation. Each entry includes the following detail:

- Date/time of event
- User logged in at time of event
- Application name and full version number
- Device serial number or workstation ID
- Event name (in plain text)
- Event detail data (in plain text)
- Election ID
- Tags

System log report

The System log report is a comprehensive log of all activity that has occurred on a workstation or network that is not election-specific. Each entry includes the same details as the audit log, listed above.

available reports: Build, *continued***Jurisdiction Configuration report**

NOTE: All lists in this report are sorted by the sequence number of the list items.

- Jurisdiction name
- List of precinct names
- List of precinct split names
- List of district names
- Precinct associations with districts
- Precinct split associations with districts

Polling Place List

This report includes a list of all polling places, with the following details for each polling place:

NOTE: All lists in this report are sorted by the sequence number of the list items.

- Polling place name
- Polling place notes
- Polling place to voting type associations
- Polling place to party associations
- Polling place associations with precincts (*optional*)
- Polling place associations with precinct splits (*optional*)
- Polling place associations with districts (*optional*)
- Items in this report can also be filtered by voting type

available reports: **Build**, *continued*

All Contests report

This report includes a list of all contests in the election.

NOTE: *All lists in this report are sorted by the sequence number of the list items.*

- Each contest includes the following details:
 - Contest title
 - Contest type
 - List of contest party associations
 - Instruction text
 - Contest notes
 - Number of valid selections
 - Number of write-in options
 - Whether contest is included in straight party
 - Whether contest is included in rotation
- A list of contest options, with the following details:
 - Option name
 - Option details
 - Option party association
- Whether contest is non-partisan
- Total count of contest that include vote-able options in this election

Contest Associations report

This report displays a list of all Contests in the election, including the following details:

NOTE: *All lists in this report are sorted by the sequence number of the list items.*

- Contest title
- Contest party association
- The contest's associations with:
 - Precincts
 - Precinct splits
 - Districts
- This report can be filtered by association type

available reports: Build, *continued***Rotation Report**

This report contains information relating to rotation, organized into the following sections:

- List of all contests included in rotation
- Contest details:
 - Contest title
 - Contest party associations
 - Option names, in rotated order, for each precinct and precinct split associated with the contest
 - Write-in options

Ballots Printed

This report lists ballot print jobs that have been created in this election, with the following details for each print job:

- Precinct name
- Precinct split name
- Party
- Quantity of ballots printed
- Language
- Ballot type
- Starting ballot number for the print job (if applicable)
- Ending ballot number for the print job (if applicable)
- Date and time of the print job
- User logged in when the ballots were printed

available reports: **Build**, *continued*

vDrives Created report

This report includes the following details relating to vDrive and creation:

- Total number of vDrives created in this election
- Total number of Test vDrives created in this election
- Total number of Official vDrives created in this election
- List of all vDrives and Keys created in this election, with the following details:
 - Media ID
 - Media type
 - User who created the media
 - Date and time the media was created

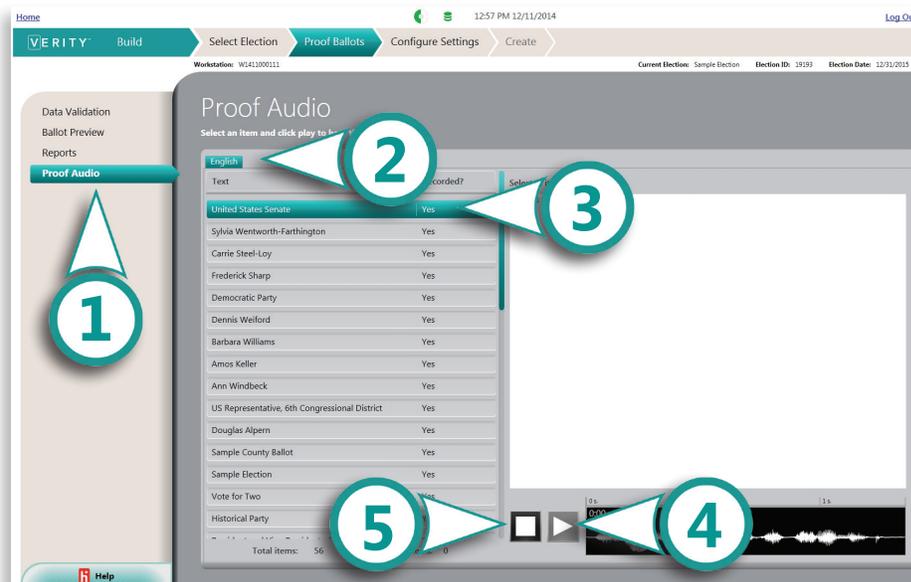
Ballot Style report

This report displays groups of precincts with a common ballot style and the total number of ballot styles.

proofing audio

The **Proof Audio** menu shows a list of all ballot items; the rightmost column indicates whether an audio recording exists for that ballot item.

- 1 Select the **Proof Audio** menu.
- 2 Select the desired language (if applicable).
- 3 Select the ballot item you would like to proof.
- 4 Click the **Play** button (triangle) to hear the audio recorded for that item.
- 5 Click the **Stop** button (square) to stop playback.



summary: proofing ballots

1 Review fold line and ballot stub positioning using the ballot preview toolbar.

2 Print and use reports to proof ballot content and associations.

3 Proof ballot content and associations for:

- Spelling and Content
- Contest Details
- Contest options
- Write-in lines
- Party information
- Candidate details
- Straight party options
- Contest instructions
- Contest, District, Precinct, and Polling Place associations

4 Review all audio after recording.

- Listen for any mispronunciations, especially with candidate names.
- Listen for truncated words at the beginning and ending of audio strings.
- Listen for extreme changes in volume from string to string.
- Confirm that all audio strings are clear, audible, and associated with the appropriate text.

general recommendations for proofing ballots

- ▶ Proof ballot content carefully; try reading the ballot upside-down or from bottom to top to encourage careful examination. Be sure to check all spelling.
- ▶ Proof ballot layout aesthetics and usability; ballots should be simple, well-spaced, and easy to understand.
- ▶ Ballot content should be laid out evenly throughout the page.
- ▶ Verify that all contests and candidate names appear without avoidable truncation or needlessly small font size.
- ▶ Assess fold patterns on different ballot styles.

Build checklist: the proof ballots tab

- 1** Log in to Verity.
- 2** Open Build and select the Proof Ballots tab.
- 3** Under the Data Validation menu, review the list for any errors or warnings. Errors must be corrected before you can proceed.
- 4** Under the Ballot Preview menu, proof ballots for content and associations, and check fold line and ballot stub positioning, if applicable. Be sure to proof all ballot styles and languages.
- 5** Under the Reports menu, print reports to help you proof ballot content and associations.
- 6** Under the Proof Audio menu, check all audio strings for accuracy and clarity.

4

configure settings

the configure settings tab



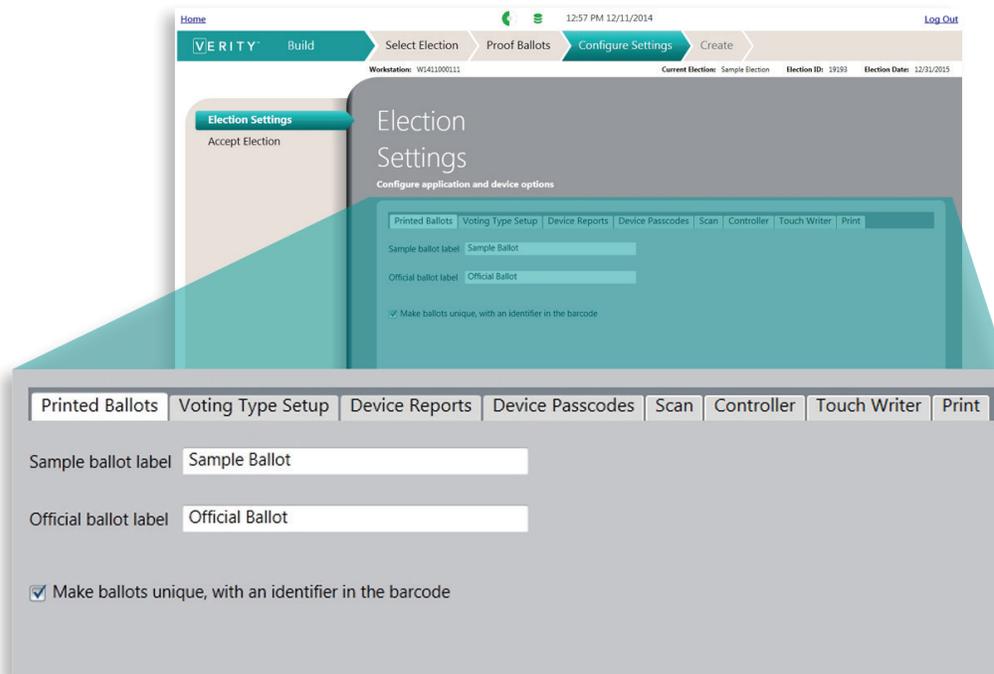
In the **Configure Settings** tab, you will set up your application and device options and accept the election in preparation for printing ballots and writing vDrives and Keys. The following menus are available in the Configure tab:

- **Election Settings:** set your options for printed ballots, voting types, and voting devices.
- **Accept Election:** finalize the election before you write vDrives and Keys and print ballots.

election settings

The **Election Settings** menu contains several tabs which allow you to set options for:

- Printed ballots
- Voting types
- Device reports
- Device passcodes
- Device options for Scan, Controller/Touch, Touch Writer and Print



election settings, *continued*

1 Select the **Printed Ballots** tab to set your printed ballot settings, if you did not do so earlier.

A) Type your default Sample ballot label. This label will appear along the top of sample ballots.

B) Type your default Official ballot label. This label will appear along the top of official ballots.

C) Check the box if you would like to include unique identifiers on your ballots. This option adds a unique identification number to the barcode on each ballot, enabling rejection of duplicate ballots during scanning.

NOTE: *Unique identifiers should not be confused with ballot numbering; see page 126.*

D) If you have made changes, click **Save**.

The screenshot shows a web interface with a navigation bar at the top containing the following tabs: Printed Ballots, Voting Type Setup, Device Reports, Device Passcodes, Scan, Controller, Touch Writer, and Print. The 'Printed Ballots' tab is selected. Below the navigation bar, there are two text input fields. The first is labeled 'Sample ballot label' and contains the text 'Sample Ballot'. The second is labeled 'Official ballot label' and contains the text 'Official Ballot'. Below these fields is a checkbox labeled 'Make ballots unique, with an identifier in the barcode', which is checked. At the bottom right of the form is a yellow 'Save' button. Four callout boxes, labeled A, B, C, and D, point to the 'Sample ballot label' field, the 'Official ballot label' field, the 'Make ballots unique' checkbox, and the 'Save' button, respectively.

election settings, *continued*

2 Select the **Voting Type Setup** tab to choose your options for each voting type for the election (Election Day, Early Voting, and Absentee). ▼

A) Check the box under **Allow Tally** if you would like poll workers to have the option to print a daily tally report from the voting devices, for this voting type.

B) Click here to set the **End Date and Time** for each voting type (required).

C) Choose the **End of Day Type**. For Election Day, this is normally Close Polls. For Early Voting and Absentee/By-mail voting, this is usually Suspend Polls, or Both.

NOTE: *“Both” may be used if you need to Suspend polls during Early Voting, and Close polls at the end of Early Voting.*

D) If you have made changes, click **Save**.

The screenshot shows a web application interface for 'Voting Type Setup'. At the top, there is a navigation bar with tabs: 'Printed Ballots', 'Voting Type Setup', 'Device Reports', 'Device Passcodes', 'Scan', 'Controller', 'Touch Writer', and 'Print'. Below the navigation bar is a table with columns: 'Name', 'Allow Tally?', 'End Date and Time', and 'End of Day Type'. The table contains three rows: 'Election Day Voting', 'Absentee Voting', and 'Early Voting'. Each row has a checkbox for 'Allow Tally?' and a dropdown menu for 'End of Day Type'. Callout A points to the 'Allow Tally?' checkbox for 'Election Day Voting'. Callout B points to the 'End Date and Time' column header. Callout C points to the 'End of Day Type' dropdown for 'Election Day Voting'. Callout D points to a 'Save' button at the bottom right of the interface.

Name	Allow Tally?	End Date and Time	End of Day Type
Election Day Voting	<input type="checkbox"/>		Close Polls
Absentee Voting	<input type="checkbox"/>		Suspend Polls
Early Voting	<input type="checkbox"/>		Suspend Polls

Save

election settings, *continued*

3 Select the **Device Reports** tab to set reporting options for the voting devices.

A) Choose how report results will be sorted. This determines the order in which contest choices will appear on reports. The available options are:

- By ballot order
- By votes received

B) Choose the level at which results will be reported. The available options are:

- At the precinct level
- At the precinct-split level

Printed Ballots | Voting Type Setup | **Device Reports** | Device Passcodes | Scan | Controller | Touch Write

Sort within a contest: By ballot order

Report results: At the precinct-split level

Report Detail:

Zero Report: By precinct/split

Ballot Count Report: By precinct/split

Tally Report: By precinct/split

Save

election settings, *continued*

C) Choose how device report details will appear. Options can be set for the Zero Report, Ballot Count Report and Tally Report. The available options are:

- **Summary:** shows consolidated contest totals for all precinct/splits assigned to that device.
- **By precinct/split:** shows contest totals separated by each precinct/split assigned to that device.

NOTE: *If you set reporting detail to “By precinct/split”, a detailed report will print showing the results for all contests, by each precinct; these may take a very long time to print if you have many precincts. Please keep in mind that choosing the “By precinct/split” option may cause delays when printing reports at Early Voting or Vote Center polling places, or when performing an LAT, since all precincts would be included.*

D) If you have made changes, click **Save**.

Printed Ballots | Voting Type Setup | **Device Reports** | Device Passcodes | Scan | Controller | Touch Writer | Print

Sort within a contest: By ballot order

Report results: At the precinct-split level

Report Detail:

Zero Report: By precinct/split

Ballot Count Report: By precinct/split

Tally Report: By precinct/split

Save

election settings, *continued*

4 Select the **Device Passcodes** tab to set the device passcodes for election staff and poll workers. Passcodes must be 6 numbers.

- A)** Set passcodes for Maintenance, Poll Workers, and Administrators.
- B)** Set Open Polls passcodes for each voting type.
- C)** Set Suspend Polls passcode for each voting type.
- D)** Set Close Polls passcode for each voting type.
- E)** If you have made changes, click **Save**.

! IMPORTANT: Log all passcodes and keep in a secure location. For information on pass code access, see page 153.

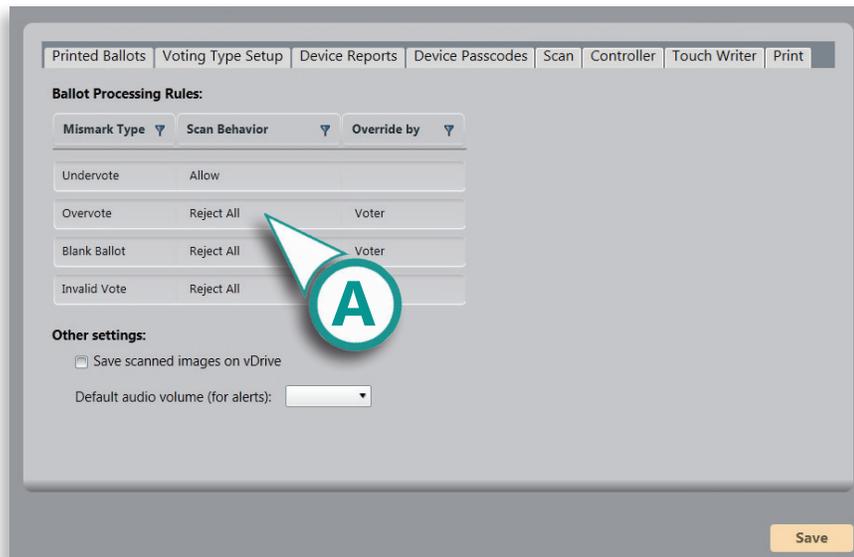
The screenshot shows a web interface for configuring device passcodes. At the top, there is a navigation bar with tabs: Printed Ballots, Voting Type Setup, Device Reports, Device Passcodes (selected), Scan, Controller, Touch Writer, and Print. Below the navigation bar, there is a section for "All voting types" with three input fields: Maintenance, Poll Worker, and Administrator. A callout 'A' points to the Maintenance field. Below this is a table with columns: Voting Type, Open Polls, Suspend Polls, and Close Polls. The rows are Election Day Voting, Absentee Voting, and Early Voting. Callouts 'B', 'C', and 'D' point to the Open Polls, Suspend Polls, and Close Polls columns respectively. At the bottom right, there is a "Save" button. Callout 'E' points to the Save button.

Voting Type	Open Polls	Suspend Polls	Close Polls
Election Day Voting	<input type="text"/>	<input type="text"/>	<input type="text"/>
Absentee Voting	<input type="text"/>	<input type="text"/>	<input type="text"/>
Early Voting	<input type="text"/>	<input type="text"/>	<input type="text"/>

election settings, *continued*

5 Select the **Scan** tab to configure the Scan device behavior when scanning ballots with voter intent issues. These settings determine if and how second-chance voting opportunities are presented to the voter.

A) Choose if Scan will allow or reject undervotes, overvotes, blank ballots, or invalid votes.



- **Allow:** allows the device to accept any contests of that type (undervote, overvote, etc.).
- **Reject All:** sets the device to prompt the voter to correct any contests of that type (undervote, overvote, etc.) before the ballot can be cast. A rejected contest can be overridden by either the voter or the poll worker (see below).
- **Reject for some contests:** selecting this option allows you to reject undervotes only for specified contests..

election settings, *continued*

B) Choose whether the **Voter** or the **Poll Worker** has the ability to override rejected undervotes, overvotes, blank ballots, or invalid votes. If a voter or poll worker chooses to accept a ballot as-is, any choices in undervoted or overvoted contests will not be counted. Otherwise, in the case of undervotes and blank ballots, the ballot can be corrected and rescanned. In the case of overvotes, the ballot can be spoiled and the voter given a new ballot, according to local jurisdiction rules.

Mismark Type	Scan Behavior	Override by
Undervote	Allow	
Overvote	Reject All	Voter
Blank Ballot	Reject All	Voter
Invalid Vote	Reject All	Voter

Other settings:

Save scanned images on vDrive

Default audio volume (for alerts):

Save

election settings, *continued*

C) Check this box if you would like the Verity Scan to save an image of each ballot page scanned to the vDrive. This may be useful for election transparency initiatives (making ballot images available to the public after the election, for instance). You must check this box if your jurisdiction uses scanned ballot images for recount purposes.

D) Set the default audio volume for alerts (such as when a ballot is rejected).

E) If you have made changes, click **Save**.

The screenshot shows a web interface for election settings. At the top, there is a navigation bar with tabs: Printed Ballots, Voting Type Setup, Device Reports, Device Passcodes, Scan, Controller, Touch Writer, and Print. Below this is the 'Ballot Processing Rules' section, which contains a table with columns for Mismatch Type, Scan Behavior, and Override by. The table has four rows: Undervote (Allow), Overvote (Reject All, Voter), Blank Ballot (Reject All, Voter), and Invalid Vote (Reject All). Below the table is the 'Other settings' section, which includes a checkbox for 'Save scanned images on vDrive' and a dropdown menu for 'Default audio volume (for alerts)'. A 'Save' button is located at the bottom right. Three callout boxes labeled C, D, and E are overlaid on the interface. Callout C points to the 'Save scanned images on vDrive' checkbox. Callout D points to the 'Default audio volume (for alerts)' dropdown menu. Callout E points to the 'Save' button.

Mismatch Type	Scan Behavior	Override by
Undervote	Allow	
Overvote	Reject All	Voter
Blank Ballot	Reject All	Voter
Invalid Vote	Reject All	

Other settings:

Save scanned images on vDrive

Default audio volume (for alerts):

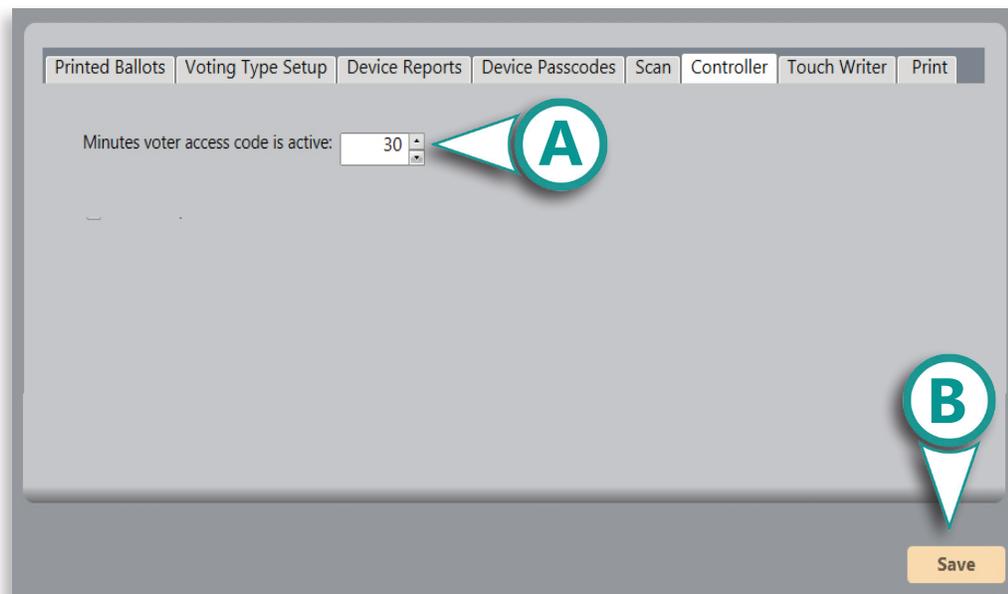
Save

election settings, *continued*

6 Select the Controller tab to set device options for Verity Controller and Touch devices.

A) Set the number of minutes an access code will remain active before expiring.

B) If you have made changes, click **Save**.



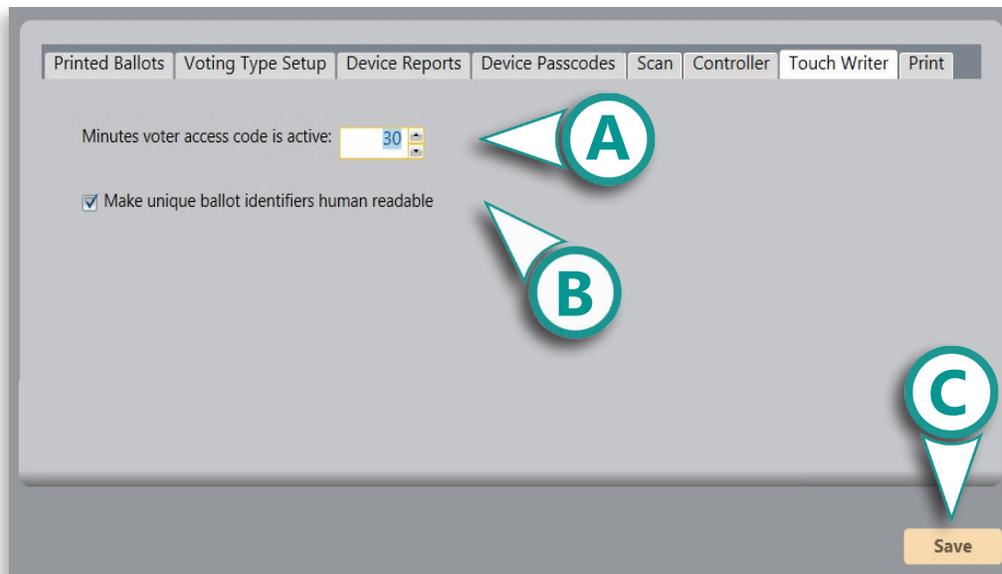
election settings, *continued*

7 Select the **Touch Writer** tab to set device options for Verity Touch Writer.

A) Set the number of minutes an access code will remain active before expiring.

B) Check the box if you would like unique identifiers to be human-readable on ballots printed from the Touch Writer. This will display the ballot's unique identifier that is contained in the barcode (when unique identifiers are enabled on the Printed Ballots tab).

C) If you have made changes, click **Save**.

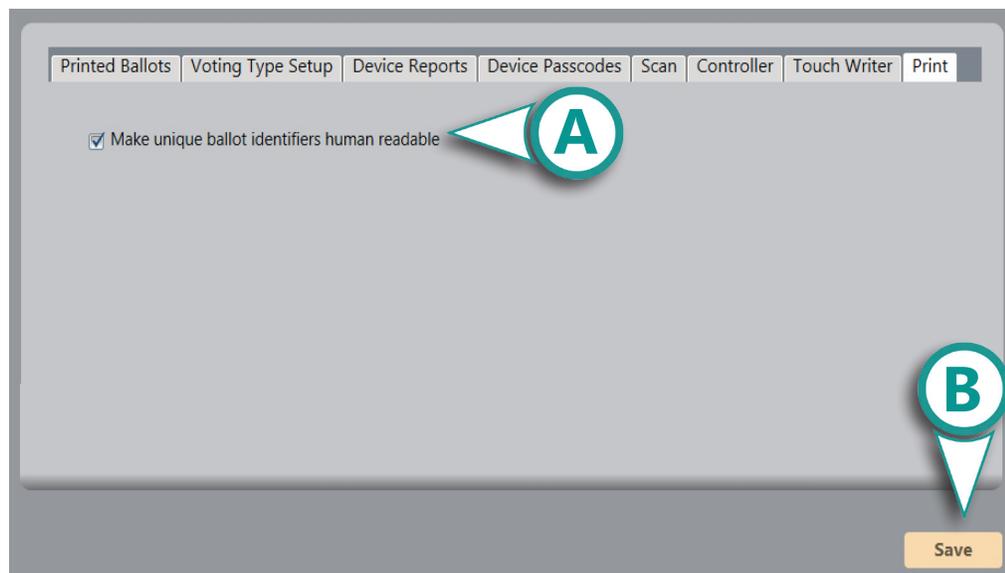


election settings, *continued*

8 Select the **Print** tab to set device options for Verity Print.

A) Check the box if you would like unique identifiers to be human-readable on ballots printed from the Verity Print. This will display the ballot's unique identifier that is contained in the barcode (when unique identifiers are enabled on the Printed Ballots tab).

B) If you have made changes, click **Save**.

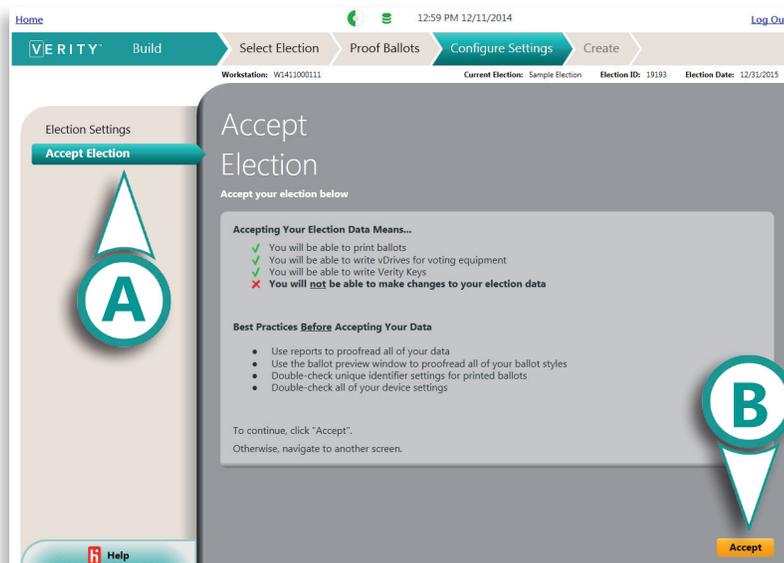


accepting the election

Accept the election **ONLY** if you are ready to write vDrives and Keys and print ballots.

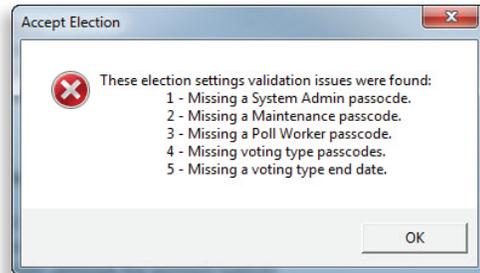
- ▶ If you are not ready to accept your election, you may log out and return later, or navigate to a previous screen to make changes.
- ▶ If you are ready to accept the election, select the **Accept Election** menu (A), and then click **Accept** (B).

! IMPORTANT: After accepting the election you will not be able to make further changes to the election; it is recommended that you archive the election before selecting Accept.

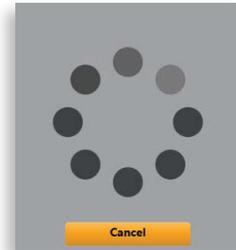


accepting the election, *continued*

1 If issues remain with the election data, you will see the message to the right. This message will list the items that must be fixed before you can accept the election. Click **OK** and correct the issues.



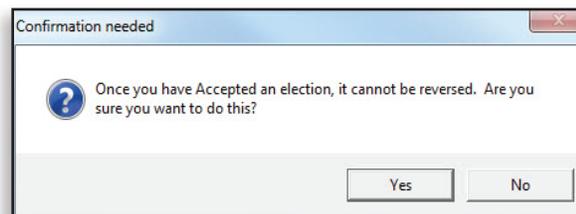
2 If there are no issues found, you will see a progress screen while the election is validated. ►



3 Once validation is complete, click **OK**. ▼



4 Click **OK** again to confirm. ▼



Build checklist: the configure settings tab

- 1** Log in to Verity.
- 2** Open Build, and select the Configure Settings tab.
- 3** Under the Elections Settings menu, review and choose election settings for printed ballots, voting types, and device reports. Set passcodes and configure settings for devices.
- 4** Before accepting the election, it is recommended that you first archive the election using the Manage application.
- 5** Under the Accept Election menu, accept the election only when you are finished making changes and are ready to print ballots and write vDrives and Keys for the election.

5

create

the create tab



In the **Create** tab, you will print ballots, write and manage vDrives, and create and manage Verity Keys. The following menus are available in the Create tab:

- **Ballots:** print ballots and/or create ballot print files.
- **vDrives:** write the election to vDrives for use on voting devices and/or Central scanning stations.
- **Keys:** write Verity Keys for the election.

about printing

- ▶ When printing paper ballots from Verity Build:
 - Ballots can be printed on-demand and in-house
 - Ballots can be exported to PDF, and printed by a third-party print vendor who typically uses a commercial digital document printer.
- ▶ Hart has developed a print vendor certification process designed to standardize the various practices used by commercial print shops. If using a contract printer, be sure that they conform to the recommended guidelines.
- ▶ For jurisdictions using unique identifiers and/or ballot numbering on your printed ballots: If your jurisdiction orders printed ballots from Hart, and *also* intends to print ballots from your own Build workstation, you must coordinate your additional printing with Hart Ballot Production services to avoid the possibility of duplicate unique identifiers and/or ballot numbers on your printed ballots. For more information, please contact your Hart Ballot Production Specialist.

! IMPORTANT: All ballots, whether printed in-house or by a third party, must be checked using a Ballot QC Overlay. A Ballot QC Overlay is used to verify that the printing alignment is within the necessary tolerances so that the ballot can be scanned properly in the Verity system. For more information, see the Verity Knowledge Base article [Ballot Printing Quality Assurance](#)

printing ballots

1 Under the **Ballots** menu, select the ballot style(s) you would like to print.

A) Ballot style is indicated in the left column; the associated precinct is in the right column.

B) You can click **Go to Preview** to go to the **Ballot Preview** screen; click the **Create** tab to return to the Ballots menu.

The screenshot shows the VERITY system interface for printing ballots. The top navigation bar includes 'Home', 'Build', 'Select Election', 'Proof Ballots', 'Configure Settings', and 'Create'. The 'Create' tab is active. Below the navigation bar, the 'Ballots' menu is open, showing 'vDrives' and 'Keys'. The main content area is titled 'Print Ballots' and contains a table for selecting ballot styles and printing options. A callout 'A' points to the table, and a callout 'B' points to the 'Go to Preview' button.

Style	Precinct
1	101-A
2	101-B
3	102
3	103
1	104

Printing Options

Quantity: 5

Type: Official, Test, Sample

Unique ballot identifiers are enabled

Make identifiers human readable

Include ballot numbering

Starting number: 1

Include ballot stub

Include stub numbering

Starting number: 1

Buttons: **Go to Preview**, **Export**, **Import**, **Print**

printing ballots, *continued*

2 For each ballot style, select the Quantity and Type of ballots to be printed. Ballot types include Official ballots, Test ballots, and Sample ballots.

- ▶ **Test ballots** are typically for testing printer settings, checking ballot layout, and for use during a Logic & Accuracy Test (LAT).
- ▶ **Sample ballots** are intended as samples to be distributed to the public. Sample ballots cannot be read or counted by voting devices.
- ▶ **Official ballots** are for voting.

The screenshot shows a 'Printing Options' dialog box with the following settings:

- Quantity: 5
- Type: Official (selected), Test, Sample
- Unique ballot identifiers are enabled:
 - Make identifiers human readable
- Include ballot numbering
 - Starting number: 1
- Include ballot stub
 - Include stub numbering
 - Starting number: 1

Buttons at the bottom: Export, Import, Print.

Other Printing options include:

- Enabling human-readable unique identifiers for printed ballots.
- Including ballot numbering.
- Including ballot stubs.

printing ballots, *continued*

3 Print the selected ballot(s).

A) Click **Print**, or

B) If you wish to export the selected ballot(s) to PDF for printing at a later time, click **Export**.

4 (*optional*) Import a print queue (see the following page for instructions on creating a print queue file).

Printing Options

Quantity

Type Official
 Test
 Sample

Unique ballot identifiers are enabled

Make identifiers human readable

Include ballot numbering

Starting number

Include ballot stub

Include stub numbering

number

Export **Import** **Print**

printing ballots, *continued*

creating a print queue file for import

Creating a print queue is a way to automate the printing process; to create a print queue you must first create a comma-delimited text (.TXT) file with ballot style(s), quantities, ballot type(s), etc. This file will also specify whether Build will automatically export the print job to PDF, or print the job immediately. For details on creating a print queue file, see the Verity Knowledge Base article *Creating Print Queue Files*.

1 On a non-Verity workstation, create a spreadsheet with the following data (all columns required):

Column	Content
1	Precinct Name
2	Split Name <i>(if applicable, otherwise leave blank)</i>
3	Party Name <i>(for closed primaries, otherwise leave blank)</i>
4	Language
5	Quantity
6	Ballot Type - Official, Test or Sample
7	Print to file? (TRUE or FALSE)
8	Output File Name

! IMPORTANT: For detailed instructions on formatting print queue files, see the Knowledge Base Article *Creating Print Queue Files*.

printing ballots, *continued*

Content descriptions

NOTE: *Precinct Name, Split Name, Party Name and Language all must match exactly their corresponding items in the ballot definition.*

- **Precinct Name:** precinct name of the ballot to print.
- **Precinct Split Name:** precinct split name of the ballot to print, if applicable. Must exactly match the Precinct Split name that was used in ballot definition.
- **Party Name:** Full party name (for closed primary elections).
- **Language:** language of the ballot to print.
- **Quantity:** the number of ballots to print.
- **Ballot Type:** can be "Test", "Sample", or "Official".
- **Print to File:** type TRUE if you would like to output the print jobs to PDF; type FALSE if you would like to output directly to the default printer.
- **Output File Name:** The name of the PDF to be produced by the import file (Note: Print to File value must be TRUE).

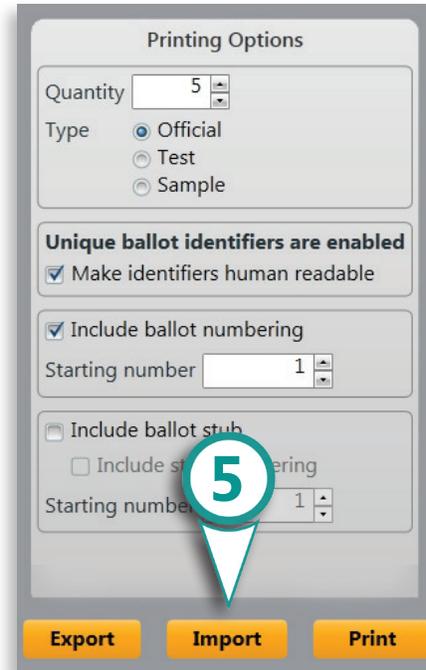
2 Once you have finished entering your data, delete the header row.

3 Save the spreadsheet you created as a comma delimited text (.CSV) file to a USB drive, then manually change the file extension from .csv to .txt

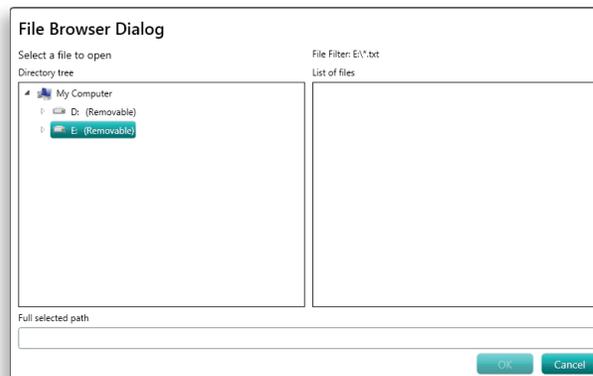
printing ballots, *continued*

4 Insert the USB containing the .txt file into an available USB port on the Build workstation.

5 Under the Printing Options panel in Build, click **Import**. ▶



6 Browse to the .txt file you created and click **OK**.



NOTE: *If you entered TRUE in the Print to File column of the .txt file, the ballots will be automatically saved to the USB drive. If you entered FALSE under the Print to File column, the ballots will be sent to the printer immediately.*

printing ballots, *continued*

creating a print queue file for import (pre-marked ballots)

You can also create a print queue file for pre-marked ballots (for use in a Logic & Accuracy Test, for example). See the Verity Knowledge Base article *Creating Print Queue Files* for details.

unique identifiers and ballot numbering

A **unique identifier** can be included in a ballot barcode, and if desired, also as a human-readable number printed on the ballot margin.

- Election officials can choose to include or exclude unique identifiers from printed ballots.
- A unique identifier is a non-serial number, used during the scanning process to detect and disallow duplicate ballots.
- The unique identifier is not tied in any way to an individual voter, as there is no individual voter data stored in the Verity system.

A **ballot number** is a separate, human-readable number that can be included in the margin of a printed ballot.

- Ballot numbering can be used in the inventory process for paper ballots.
- Numbering can be started or restarted at any number.
- Ballot numbers are not used during the ballot scanning process.

visual ballot guide: barcodes and numbering

Official Ballot
Sample Election
December 31, 2015
Sample County, Sample State

Precinct 101-B
Sample County Ballot
Page 1 of 2

Please use a blue or black ink pen to completely fill in the box next to your choice. To vote for a write-in candidate, fill in the box next to the words "Write-in," and write in the name of your candidate on the line underneath the box.

United States Senate
Vote for One

Dennis Weiford
Whig

Lloyd Garriss
Historical

Sylvia Wentworth-Farthington

John Hewetson

Write-in:

US Representative, 6th Congressional District
Vote for One

Brad Plunkard
Whig

Bruce Reeder
Historical

Brad Schott

Glen Tawney

Straight Party

Whig Party

Historical Party

President and Vice-President of the United States
Vote for One Pair

Joseph Barachi and Joseph Hallaren
Whig

Adam Cramer and Greg Vuocolo
Historical

Daniel Court and Amy Blumhardt

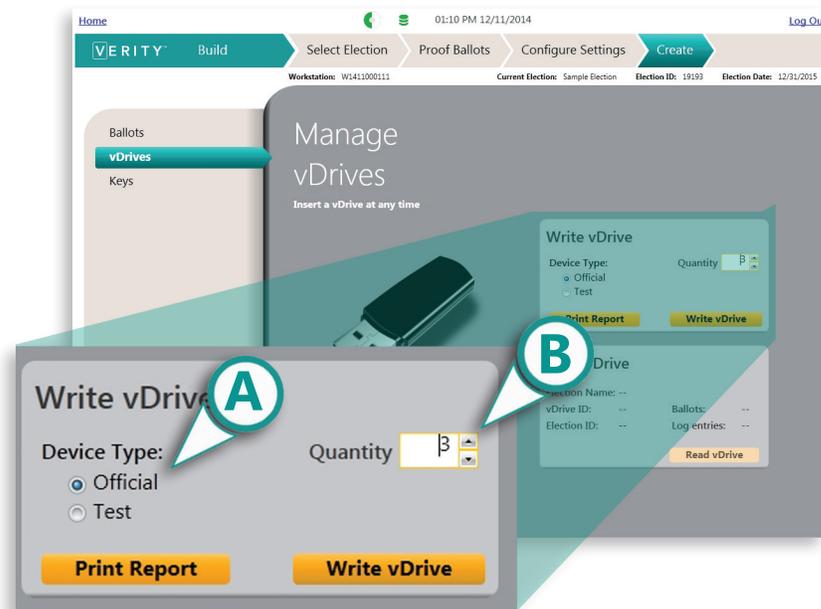
Read Both Sides of the Ballot

Callouts:

- Precinct
- Party
- Ballot Type
- Election ID
- Ballot Number (if applicable)
- Election ID
- Unique Identifier (human readable) (if applicable)
- Language
- Sheet
- Page Number
- Unique Ballot Identifier (if applicable)
- vDrive ID (Touch Writer and Print only)

creating vDrives

Before writing vDrives, you should plan the quantity of vDrives needed, using the vDrive Worksheet as a guide (see page 130). As vDrives are written, log the Polling Place and vDrive ID for each vDrive on the vDrive Tracking Log. Additional vDrives can be written at any time, as needed.

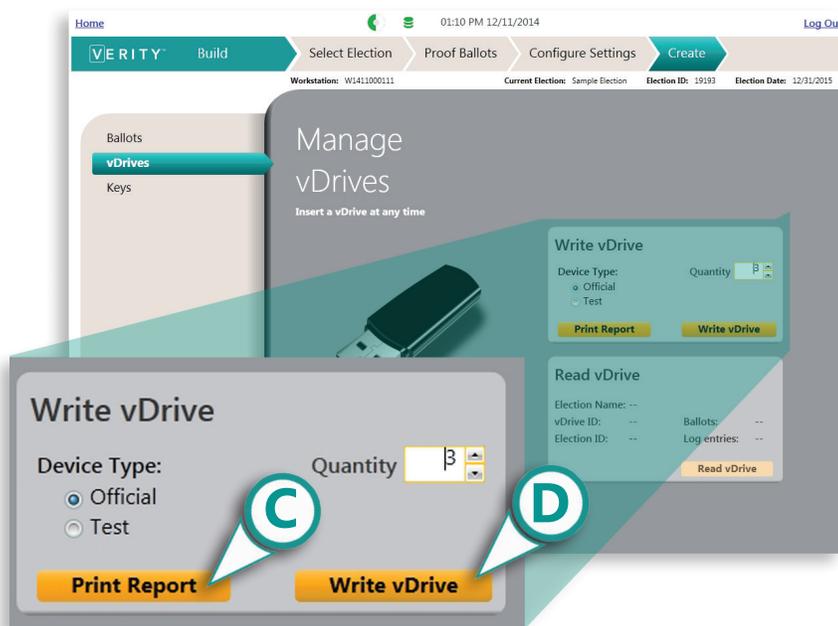


1 Write vDrives.

A) Choose the device type (Official or Test).

B) Choose the quantity of vDrives to be written.
For help with planning vDrive quantities, see page 130.

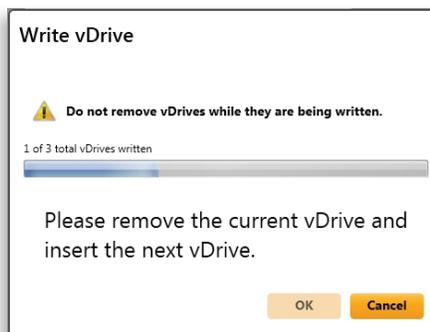
creating vDrives, *continued*



C) To print a report of all vDrives written, click **Print Report**. Use this report to log vDrive IDs for future reference. Copy this data to the vDrive Tracking Log, if desired.

D) Click **Write vDrive**. You can insert *one* vDrive to be written into an open USB port at any time.

E) When prompted, you can remove the vDrive and insert the next vDrive to be written. ►



planning vDrive quantities

A vDrive Worksheet is included in the Logs and Labels Pack (available from Hart) to assist you with planning vDrive quantities. Requirements will vary by jurisdiction, but generally speaking you will need the following at minimum:

Test vDrives:

- 1 vDrive for each device (Controller, Touch, Touch Writer, Scan) to be used in the Logic and Accuracy Test (LAT).
- 1 vDrive for each Central scanning setup used in the LAT (minimum, see below under official mode vDrives).
- 1 vDrive per device in use at Help Desk, etc.
- 10% of total as spare Test vDrives.

Official vDrives

- 1 vDrive for each device (Controller, Print, Touch, Touch Writer, Scan) to be used in the election – Absentee, Early Voting, Election Day.
- 1 vDrive minimum for each Central scanning setup, per 10k CVRs. More if pulling incremental reports from Count, or as per local Central workflow (e.g. Absentee and Early Voting on separate vDrives, etc.).
- 20% of total as spare Official vDrives.

creating vDrives, *continued*

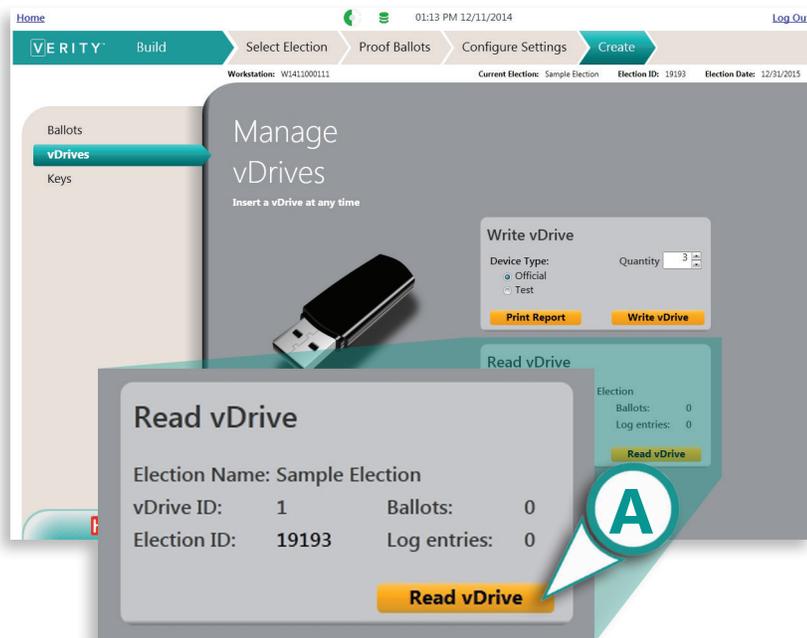
2 Record the Election Name, Polling Place Names and vDrive IDs on the vDrive Tracking Log.

This log will be used when preparing equipment for deployment to the polling places. You can also click Print Report for a report of all vDrives written.

3 To read a previously written vDrive, insert the vDrive into an available USB port on the Build workstation.

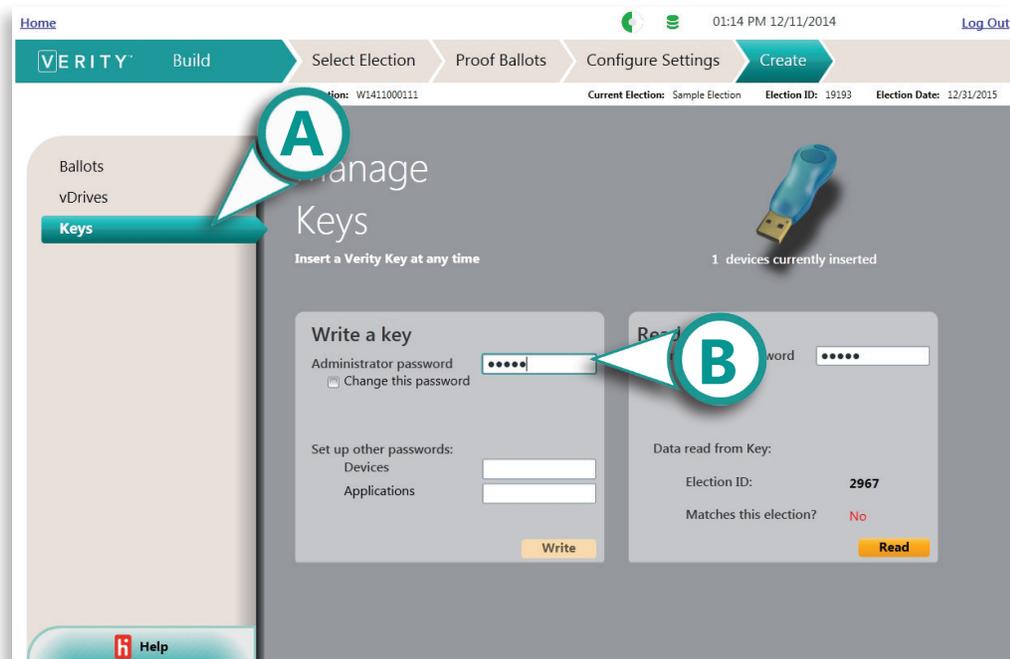
A) Click Read vDrive.

B) The details for the vDrive inserted will display.



creating Verity Keys

1 Write Verity Keys for the election.



A) Choose the Keys menu.

B) Insert a Key into an available USB port, and then enter the administrator password. The password you enter the first time you write the Key in Build stays attached to the Key until changed. You can change the password by checking the box next to **Change this password**. You will be prompted to enter the current administrator password as well as the new password.

creating Verity Keys, *continued*

! IMPORTANT: Do not lose or forget the administrator password, as there is no way to recover it. The administrator password is used to write and read the Key in Build; if the password is forgotten, the Key cannot be re-written or re-used ever again.

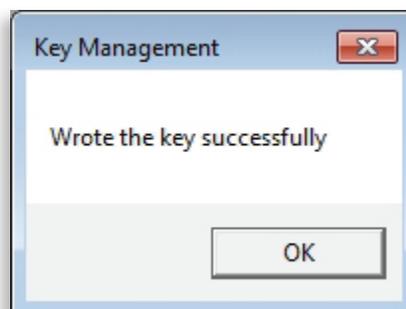
C) Set up passwords for voting devices and applications. These passwords can be changed for each election. All are required.



NOTE: *These are the passwords that are required when you use the Verity Key with the voting devices (for example, to predefine the polling place) and in the other Verity applications (to read in and tabulate vDrives in Count, for example). A complete list of actions requiring the Verity Key is provided on page 135.*

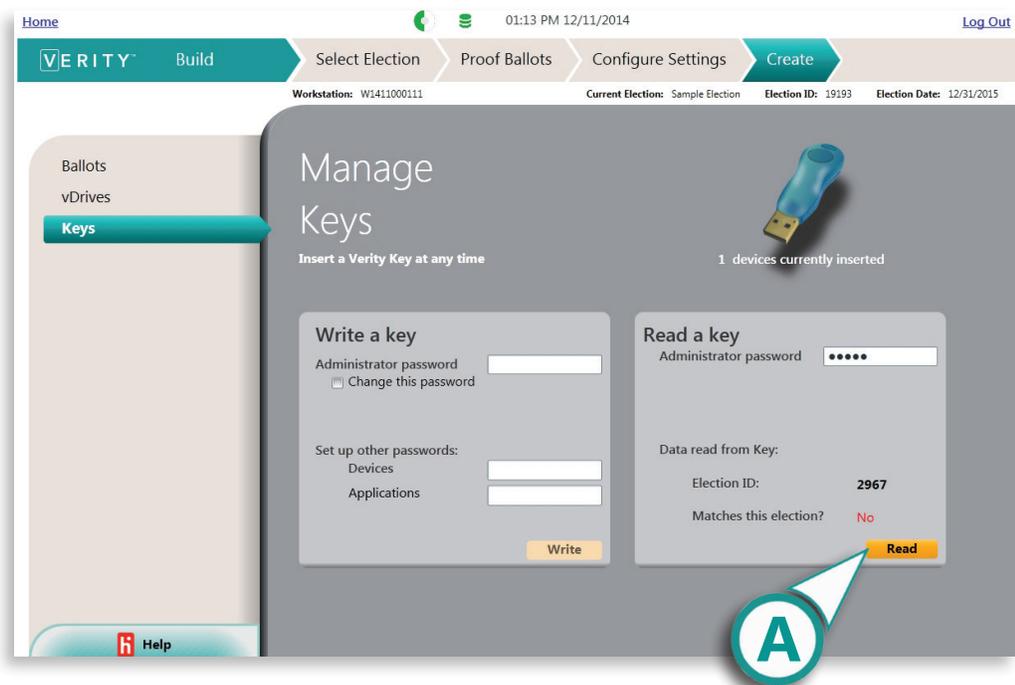
D) Click **Write**.

E) Remove the Key only after you see the success message shown. Click **OK**. ►



creating Verity Keys, *continued*

2 To read a previously written Key, insert the Key into an available USB port on the Build workstation.



A) Click **Read**. You will be prompted to enter the administrator password for the Key.

B) The Key data will display.

actions requiring use of the Verity Key

use in Verity Build

- ▶ Verity Keys are written for the current election in Verity Build. Writing Verity Keys requires the Operator or Media Creator user to know the Verity Build administrator password. When writing the Verity Key in Build, the user will assign application and device passwords for the election. See page 108 of this guide.

use in voting devices

- ▶ Verity Key is required to predefine voting devices with the proper polling place prior to deployment. The Verity Key is removed from the device after predefining, before the device is sealed and transported to the polling place. See the *Verity Support Procedures Guide* for predefining procedures.

use in Verity Central

- ▶ In Central, the Verity Key is required in order to import a signed election export from a Verity Build workstation. The user must know the Verity Key application password, set in Build. See the *Verity Administrator's Guide: Central*.
- ▶ A Verity Key is also required in order to create a Recovery vDrive in the event of a damaged or lost vDrive in Central. The user must know the Verity Key application password, set in Build. See the *Verity Administrator's Guide: Central*.

actions requiring use of the Verity Key,

continued

use in Verity Relay

- ▶ In Relay, the Verity Key is required in order to import a signed election export from a Verity Build workstation. The user must know the Verity Key application password, set in Build. See the *Verity Administrator's Guide: Relay*.

use in Verity Count

- ▶ In Count, the Verity Key is required in order to import a signed election export from a Verity Build workstation. The user must know the Verity Key application password, set in Build. See the *Verity Administrator's Guide: Count*.
- ▶ Verity Key is also required in order to read the first vDrive for an election into Count. See the *Verity Administrator's Guide: Count*.

practicing Key security

- ▶ Limit access to Keys and maintain chain of custody logs.
- ▶ Remove Keys from equipment when not in use.
- ▶ Limit access to the Verity Key passwords, in particular the Key Administrator password.

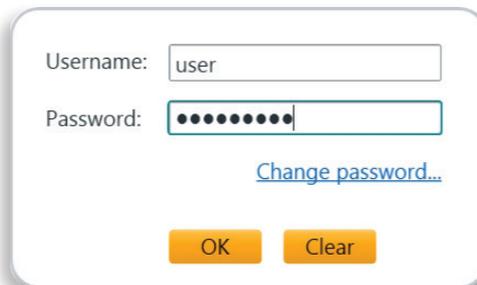
exporting an election from the Build workstation

To open the election you accepted in Build on a separate Verity Central or Count workstation, you first must export the election in the Manage application on the Build workstation.

NOTE: *if you are using a configuration with Build and Count on the same workstation, and you do not use Central, you can skip this procedure.*

1 Insert a removable media (USB) into an available USB port on the Build workstation computer. (You will save the signed election export to the removable media so that you can transfer it to a Central or Count workstation).

2 Log in to the Verity Build workstation.



A screenshot of a login form with the following elements:

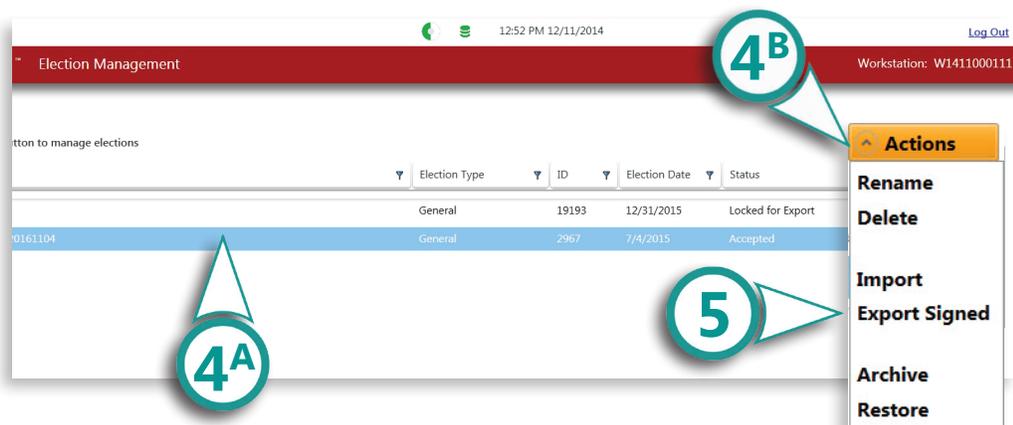
- Username:
- Password:
- [Change password...](#)
-
-

3 On the Verity home page, click the **Manage** tile.



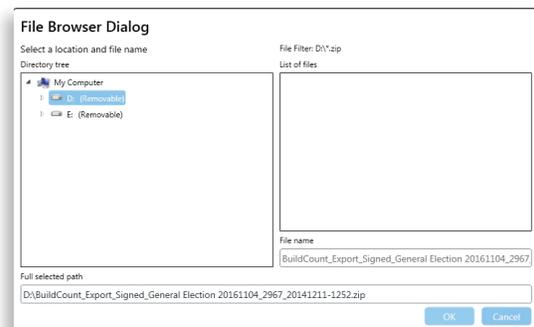
exporting an election on the Build workstation, *continued*

4 In the Manage application, select the election (A), and then click **Actions** (B).



5 Select **Export Signed** from the Actions drop-down menu (the election must be in an Accepted state for Export Signed to be enabled).

6 Browse to the location of the removable media (USB). Click **OK**.



7 Remove the removable media (USB) ; you will use this to transfer the signed export file to your Relay, Central and/or Count workstation(s).

Build checklist: the create tab

- 1** Log in to Verity.
- 2** Open Build, and select the Create tab.
- 3** Under the Ballots menu, you can print ballots or export ballots to PDF for printing later. You can also import print queue files to streamline your printing process.
- 4** Under the vDrives menu, you will write vDrives for use in voting devices (and in Verity Central, if applicable). Use the vDrive planning worksheet to help you plan quantities of vDrives for your election. You can write additional vDrives at any time.
- 5** Under the Keys menu, you will write Verity Keys for use during the election. You must know the Administrator passcode for the Key in order to write it for an election. Practice proper Key security when handling and distributing Verity Keys.
- 6** Click Home to return to the Verity home screen.
- 7** Insert a removable USB media device.
- 8** Open Manage and export the election to the removable USB media.



appendix A: Logic and Accuracy Testing

A Logic and Accuracy test (LAT or L&A) is a test of the tabulation accuracy of a voting system. The LAT is designed to verify that, for the election being tested, a vote for any ballot option will tabulate as expected for that ballot option. A Logic and Accuracy test is not a test of device functionality or an acceptance test. State and local guidelines dictate the time frame for performing Logic and Accuracy Tests; however, Hart InterCivic recommends that a Logic and Accuracy Test is performed, at a minimum, before any ballot, in any form, goes to any voter, and that a Logic and Accuracy Test include votes cast on every type of device/software that will be used to capture cast vote records in the upcoming election (e.g., Verity Controller/Touch, Verity Scan, Verity Central), as well as any software used for vote tabulation (e.g., Verity Count).

logic and accuracy testing: an overview

! IMPORTANT: All LAT recommendations and procedures presented here are superseded by your State election law, rule, and code.

A properly run LAT tests the logic of tabulation system-wide, and includes the following:

- Voting on devices that capture Cast Vote Records (e.g. Verity Controller/Touch, Verity Scan), and scanning of paper ballots in Verity Central (if applicable).

NOTE: *In accordance with Hart best practices, the Touch Writer is not a required component in an LAT, since it does not capture Cast Vote Records. Each jurisdiction must, of course, follow state and local guidelines.*

- Tabulating the votes in Verity Count and comparing Count application reports to expected outcomes.

When conducting the LAT, consider the following:

- Perform the LAT with Test mode vDrives. Use the vDrive Planning Worksheet and remember to plan for an appropriate number of Test mode vDrives.
- Run the complete LAT from the same election used for the Official election.
- In Verity Data, create an Election Day Polling Place specifically for the LAT and assign all precincts to this polling place (or, work with Hart Ballot Production Services to do so, if applicable). Predefine your LAT device(s) with this Polling Place using Test mode vDrive(s).

suggested materials and supplies

- LAT Checklist
- LAT Log
- LAT labeled envelope
- Test mode vDrives created in Verity Build (or provided by Hart)
 - 1 per voting device used in the LAT (vDrives not required for Verity Touch)
 - 1 per Verity Central workstation used in the LAT
- Test deck of ballots printed from Verity Build (or provided by Hart) and marked according to State requirements
- Spare blank test ballots
- At least one Verity Controller/Touch and/or Verity Scan (more as needed according to your LAT plan)
- Verity Central workstation and scanner (if applicable)
- Verity Count workstation

Hart recommended procedures for performing an LAT

Complete the following steps to perform an LAT. Follow state requirements governing the prior announcement and publication of the test date, time, and location.

hand-count the Test Deck

Hand count the test deck of pre-voted paper ballots, taking overvotes and blanks into account. If you use Hart Ballot Production Services, Hart will provide the pre-voted ballots. If creating your own test deck, you may wish to keep a spreadsheet or matrix of the votes marked in the test deck for each ballot option, according to your state requirements.

prepare the equipment

NOTE: *for instructions on predefining voting devices, see the Verity Support Procedures Guide.*

Predefine the Verity voting devices. You must make sure each device being used in the LAT is predefined with your Election Day LAT Polling Place ID. You may use more than one set of Verity voting devices in order to speed up the testing, but you do not need to test each device in an LAT. Each voting device *does* need to be tested if performing functionality testing (see the *Verity Support Procedures Guide* for functionality testing procedures). Again, all LAT procedures presented here are superseded by State election law, rule, and code.

appendix A: Logic and Accuracy Testing

Hart recommended procedures for performing an LAT, *continued*

vote on the Verity Controller/Touch and/or Verity Scan using the test deck

NOTE: *for instructions on voting using the Verity Controller/Touch or Verity Scan, see the appropriate Verity Polling Place Operations Guide.*

- 1 Print the Zero report on the Verity voting device(s).
- 2 Open polls on the voting device(s).
- 3 Scan the test deck using the Verity Scan/Vote the test deck using the Verity Controller/Touch.
- 4 Close polls on the voting device(s).
- 5 (Optional) Print and save the device Tally report if you would like to check accuracy of the test against the expected results prior to tabulation in Count.
- 6 Remove the vDrive from Verity Controller and/or Verity Scan and take to the Count workstation for tabulation.

NOTE: *the Tally report will only be available if you have checked "Allow Tally" when configuring the election in Build (see page 107 of this guide).*

! IMPORTANT: In Build, if you set the device reporting detail for the Tally Report to "Summary", the report will contain only the totals for the device. If, however, you set reporting detail to "By precinct/split", a detailed report will print showing the results for all contests, by each precinct; this may take a very long time to print if you have many precincts. Therefore, if you chose "By precinct/split" in Build, you may wish to skip this step in the interest of time. See page 107 of this guide.

Hart recommended procedures for performing an LAT, *continued*

process ballots in Verity Central

NOTE: For instructions on processing ballots using Verity Central, see the Verity Administrator's Guide: Central.

- 1** On the Central workstation, insert a Test vDrive into the USB port.
- 2** Log into Verity and import the signed election export file from Build using the Manage application.
- 3** Log out of Manage and log in to Central.
- 4** Open the election in Central.
- 5** Create and open a task for LAT 1 (Task type: Test).
- 6** Print and file a Zero report, if required.
- 7** Scan the test deck in Central.
- 8** Resolve undervotes, overvotes, damaged contest and write-ins (if applicable), according to the test plan.
- 9** Write all ballots to vDrive.
- 10** Print and save a Batch Detail report for later reference.
- 11** Remove vDrive and take to the Count workstation for tabulation.

Hart recommended procedures for performing an LAT, *continued*

tabulate in Verity Count

NOTE: For instructions on tabulation using Verity Count, see the Verity Administrator's Guide: Count.

- 1 On the Count workstation, import the signed export file from Build using the Manage application, if you have not already done so.
- 2 Exit Manage and open Verity Count.
- 3 Open the election in Count.
- 4 Create and open a task for **LAT 1**. (Task type: **Test**)
- 5 Print and file a Zero Report.
- 6 Read in vDrives from the Verity Controller and/or Verity Scan device(s) and Verity Central.
- 7 Tabulate the vDrives in Count.
- 8 Resolve write-ins in Count (if applicable).
- 9 Print and file a Cumulative report, including overvotes, undervotes, and write-ins (if applicable).

compare results

Compare the Cumulative Report from Count and the reports from Controller, Scan and Central against the expected results based on the test deck. The reports should match exactly the expected results from the test deck. If the results do not match, identify the discrepancy and reconcile or re-run the LAT.

the LAT Log

The LAT log includes a checklist of reports that should be printed and filed with the LAT materials and a place to record the pertinent LAT data and signatures of participants. Complete and file the LAT log and other paperwork in the LAT-labeled envelope with the vDrives used for the LAT. In some jurisdictions a second read of the LAT vDrives (sometimes referred to as the "LAT 2") is required before tabulating election results. If this is the case in your jurisdiction, you will use the vDrives and reports you file from the first LAT to complete the LAT 2. For instructions on performing an LAT 2, see the next page.

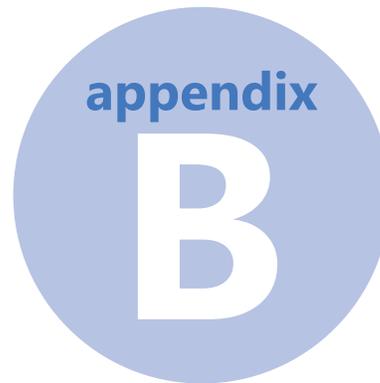
performing an “LAT 2”

If your jurisdiction requires a second read of the LAT vDrives on Election Day, follow the recommended procedures below. The second LAT, if performed, must be done prior to tabulating official election results. Again, all LAT procedures presented here are superseded by State election law, rule, and code.

NOTE: *For instructions on tabulation using Verity Count, see the Verity Administrator’s Guide: Count.*

- 1** Open the election in Count.
- 2** Create and open a task for **LAT 2**. (Task type: **Test**)
- 3** Print and file a Zero report.
- 4** Read in vDrives from the first LAT.
- 5** Tabulate the vDrives in Count.
- 6** Resolve write-ins in Count (if applicable)
- 7** Print and file a Cumulative report, including overvotes, undervotes, and write-ins (if applicable).
- 8** Compare the Cumulative report against the reports from the first LAT and reconcile if necessary.





appendix B: Verity system limits & access

The tables on the following pages list the Verity system limits for user names and passwords, maximum limits for election data, character limits for text elements, and device passcode access requirements.

user names and passwords

Item	Character Range
User Name	1-50
User Password	1-50
Device and Application Passcodes	6 (numeric)

election data limits

Item	Upper Limit
Precincts	2,000
Splits per Precinct	20
Total Precincts and Splits in an Election	2,000
Districts	75
Polling Places	1200
Parties in a General Election	24
Parties in a Primary Election	10
Contests and Propositions (combined)	200
Contest Choices (voting positions) in a Contest	75
Total number of Contest Choices in an Election (independent from ballot size)	600
Number of Write-in Options	75
Voting Types	5
Tasks per Election (Central, Count)	15
Sheets per vDrive: Scan	9999*
Sheets per vDrive: Central	80,000**
Number of Voters Definable per Election	1,000,000
Maximum Sheets per ballot	4
Ballot Stubs per ballot	2
Number of ballots: Scan (1 sheet ballot)	9999
Number of ballots: Scan (2 sheet ballot)	4999
Number of ballots: Scan (3 sheet ballot)	3333
Number of ballots: Scan (4 sheet ballot)	2499
Number of ballots: Central	1,000,000
Number of CVRs (sheets): Count	4,000,000
Number of vDrives: Count	1200
Ballot Sizes - Build, Central, Print, Touch Writer, Scan	8.5"x11", 8.5"x14", 8.5"x17"
Ballot Sizes - Build, Central (also includes)	11"x17"

* The sheet limit for Verity Scan represents a **recommended** limit for the number of sheets scanned on an individual Verity Scan during a single election.

**20,000 4-sheet ballots

appendix B: Verity system limits & access

system character limits

Item	Character Limit
Election ID	99,999 (digits)
Election Name	50
Election Title	100
Jurisdiction Name	100
Precinct Label	20
Write-in Label	20
Sample and Official Ballot Labels	20
Party Name	50
Party Ballot Text (Affiliation)	50
Party Abbreviation	3
Precinct Name	40
Precinct Split Name	10
District Name	100
District Description	500
Polling Place Name	50
Polling Place Notes	1,000
Voting Type Name	50
Ballot Header Label	100
Ballot Header Additional Information	100
Ballot Instruction Text	10,000
Ballot Additional Text	1,000
Contest Title	100
Contest Instruction Text	50
Proposition Title	100
Proposition Text	10,000
Proposition Notes	500
Contest Choice Name	100
Contest Choice Details	100
Write-in Choice Name (Touch/Touch Writer)	25
Ballot Stub Free Form Fields (4)	50 each

device pass code access requirements

Menus/Actions	Code(s) Required
CHANGE SETTINGS MENU	
<i>Set Clock</i>	Maintenance Code
<i>Touchscreen Calibration</i>	
<i>Set Alert Volume (Verity Scan only)</i>	
<i>Scanner Contrast Calibration (Verity Scan only)</i>	
<i>Scanner Speed Calibration (Verity Scan only)</i>	
POLL WORKER TASKS MENU (Touch Writer)	
<i>Create Ballot Access Code</i>	Poll Worker Code
<i>Deactivate an Access Code</i>	
<i>Spoil Current Ballot</i>	
<i>Print Access Code Summary</i>	
MAIN MENU (Touch)	
<i>Spoil Ballot</i>	Poll Worker Code
ADMINISTRATOR MENU	
<i>Change Ballot Rules (Verity Scan Only)</i>	Administrator Code
<i>Enable Recount Mode* (Verity Scan Only)</i>	
<i>Change Report Settings* (Verity Scan and Controller Only)</i>	
<i>Create Recovery vDrive</i>	
OTHER ACTIONS	
<i>Load Election (upon inserting a vDrive for a new election)</i>	Maintenance Code; Verity Key Password
<i>Open Polls</i>	Open Polls Code
<i>Suspend Polls</i>	Suspend Polls Code
<i>Close Polls</i>	Close Polls Code

**if available in your jurisdiction*

glossary

abandoned ballot

A ballot that the voter did not cast into the ballot box before leaving the polling place. Local election rules dictate dispensation of an abandoned ballot. In some jurisdictions, abandoned ballots must be spoiled (see also spoiled ballot).

absentee ballot

Ballot cast by a voter unable to vote in person at his or her polling place on election day.

absentee voting

A voting method by which people can cast their ballots without going to the polling place on election day. In some jurisdictions, early voting is referred to as 'absentee-in-person' or 'absentee walk-in' and by-mail voting is sometimes referred to as 'absentee-by-mail.'

acceptance testing

Examination of voting equipment and testing of basic functionality upon delivery including validation that the delivered system is, in fact, the certified system purchased.

access code

The five-digit number given to each voter that indicates to the Verity system which precinct and ballot style to display to the voter on the Touch or Touch Writer. The access code is printed by the poll worker from the Controller or Touch Writer. The access code is only valid for a limited time and does not link to any voter information.

access code summary report

A report that is printed on the Controller or Touch Writer. It lists the number of access codes issued, voted, expired, and canceled.

adjudication

The task of assigning the voter's intent to votes on ballots that contain an undervoted contest, an overvoted contest, a contest with a selected write-in, or an invalid vote. Adjudication may also be required for a completely blank ballot or a damaged ballot. Also called resolution.

air gap

A physical separation that describes how non-certified and certified voting system applications relate to each other and manage data. A variety of methods can support a physical 'air gap,' primarily the absence of any network connection between non-certified and certified applications. These air gaps act as a physical firewall for all data and access ensuring integrity and security.

Americans with Disabilities Act (ADA)

A 1990 federal act that established comprehensive standards for the treatment of persons with disabilities in employment, public accommodations, and other programs, including those operated by state and local governments.

audio ballot

A ballot in which a set of contests is presented to the voter in spoken, rather than written, form.

audio-tactile interface (ATI)

Voter interface designed to not require visual reading of a ballot. Audio is used to convey information to the voter and sensitive tactile controls allow the voter to communicate ballot selections to the voting system.

audit log

A report containing recorded information that allows elections officials to view the steps that occurred on the equipment and/or software included in an election in order to verify or reconstruct the user actions taken without compromising ballot or voter privacy.

authentication

The verification of the identity of a person or process. In a communication system, authentication verifies that messages really come from their stated source, like the signature on a (paper) letter.

ballot

The official presentation of all of the contests to be decided in a particular election.

ballot box

A secure receptacle for the Verity Scan that collects scanned paper ballots and also has an emergency compartment for temporary storage of unscanned voted ballots in case the Scan is disabled.

ballot box security seal

The seal attached to the ballot box door to secure the paper ballots. *See also security seal.*

ballot count

A number, shown on the Verity configuration reports and Polls Open screens that indicates how many ballots have been processed on that device for the current election. The ballot count of a device is reset to zero when a new election is loaded by election staff before an election.

ballot drop box

When voted ballots are collected from a physical box at a specific location, instead of by mail.

ballot image

For a paper ballot, the electronic digital picture of the ballot. For an electronic ballot, the Cast Vote Record of the electronic ballot.

ballot instructions

(1) Instructional text that appears at the top of the ballot. There are two separate types of Ballot Instruction text: (1) electronic and (2) paper ballot. There is also separate audio instruction associated with the Touch or Touch Writer ballot instruction. (2) Information provided to the voter during the voting session that describes the procedure for voting a ballot. Such material may (but need not) appear directly on the ballot.

ballot marking device (BMD)

An electronic machine at which a voter can make selections and then print a marked ballot, which the voter takes to a scanning device to be cast. No vote records are stored on the ballot marking device itself.

ballot measure

(1) A question that appears on the ballot for approval or rejection. (2) A contest on a ballot where the voter may vote yes or no.

ballot number

In Verity, a number that can be placed on the ballot but which is not digitally processed in the system and is not part of the Cast Vote Record.

ballot position

The order on the ballot in which a candidate's name appears. For example, candidate B may have the 2nd position on the ballot, meaning that there is one candidate's name ahead of candidate B for that contest.

Ballot Production Services (BPS)

The Hart InterCivic Ballot Production Service (BPS) is a fee-based service that provides ballot programming and ballot printing service for customers who use Hart InterCivic voting devices.

ballot rotation

Process of varying the order of the candidate names within a given contest. Candidate names can rotate by precinct, by ballot, or by other schema.

ballot scanner

Device used to read the voter selection data from a paper ballot.

ballot stub

A perforated, removable portion of a ballot used in some jurisdictions. The ballot stub does not contain voteable contests.

ballot style

A ballot style is a grouping of certain precincts with an identical contest configuration. Every precinct's (or split precinct's) ballot is linked to one ballot style and there may be several precincts with the same ballot style. In Verity, the ballot style information is carried on the vDrive.

ballot text

Informational text embedded in the ballot that does not have the properties of a contest and cannot be voted. Ballot text is often used to identify a section of the ballot.

bar code

A printed horizontal strip of vertical bars of varying widths, groups of which represent decimal digits. In the Verity voting system, bar codes are required in order for paper ballots to be correctly scanned.

BMD

See **ballot marking device (BMD)**.

by-mail

When voters receive ballots through the mail system, and then return voted ballots to the scanning and tabulation center via the mail system (or via drop boxes).

candidate

Person contending in a contest for office. A candidate may be explicitly presented as one of the choices on the ballot or may be a write-in candidate.

canvass

Compilation of election returns and validation of the outcome that forms the basis of the official results by a political subdivision.

cast ballot

Ballot that has been deposited by the voter in the ballot box or electronically submitted for tabulation.

Cast Vote Record (CVR)

An anonymous record of the contest options that a voter selected on his/her cast ballot (otherwise known as the voter's choice set). In the Verity voting system, Cast Vote Records are stored in electronic format. One Cast Vote Record is equivalent to one ballot, and is the permanent record of all votes produced by a single voter whether in electronic, paper or other form. Also referred to as ballot image when used to refer to electronic ballots.

central count

When the ballots are scanned and then tabulated at a central facility, and not at the polling place(s) where in-person voting took place.

certification

Procedure by which a third party gives written assurance that a product, process or service conforms to specified requirements. See also state certification and national certification.

certification testing

Testing performed under either national or state certification processes to verify voting system conformance to requirements.

challenged ballot

Terminology and rules for challenged ballots vary by state. In general, a challenged ballot results when a voter's right to cast a ballot in a certain jurisdiction is challenged for various procedural reasons. If the challenge stands, the voter may, in most cases, vote provisionally.

close polls report

Report printed by the Verity voting device when the polls are closed. This report includes a time stamp indicating the date and time printed.

closed primary

Primary election in which a voter receives a ballot listing only those candidates running for office in the political party with which the voters is affiliated. In some states, non-partisan contests and ballot issues may be included. In some cases, political parties may allow unaffiliated voters to vote in their party's primary.

CMOS battery

Coin battery within a Verity device tablet that maintains the system clock functions while the device is turned off.

commercial off-the-shelf (COTS)

Commercial, readily available hardware devices (such as card readers, printers or personal computers) or software products (such as operating systems, programming language compilers, or database management systems).

component

Element within a larger system; a component can be hardware or software. For hardware, it is a physical part of a subsystem that can be used to compose larger systems (e.g., circuit boards, internal modems, processors, computer memory). For software, it is a module of executable code, that can be moved around as a whole that performs a well-defined function and interacts with other applications.

contest

A choice to be made on the ballot; a race. Contest types include offices, issues, referendums, measures, and propositions.

count

Process of totaling votes. Also the name of Verity's tabulation software application. *See* **tabulation**.

credentials

Authentication information that enables access to operations in the system or associated databases. Credentials typically include user IDs and passwords.

cross filing

Also referred to as cross-party endorsement, this is the endorsement of a single candidate or slate of candidates by more than one political party. The candidate or slate appears on the ballot representing each endorsing political party.

cryptographic key

Value used to control cryptographic operations, such as decryption, encryption, signature generation or signature verification.

cryptography

Discipline that embodies the principles, means, and methods for the transformation of data in order to hide their semantic content, prevent their unauthorized use, prevent their undetected modification and establish their authenticity.

cumulative voting

A method of voting exclusive to multi-member district election (e.g. county board) in which each voter may cast as many votes as there are seats to be filled and may cast two or more of those votes for a single candidate.

CVR

See Cast Vote Record (CVR).

damaged ballot

A paper ballot that has been torn or otherwise damaged to the extent that it cannot be read using an optical or digital scanning device.

digital scan

A process where ballots are scanned and the electronic, or digital, images of the ballot are captured in whole (as opposed to optical scan, where the image is not captured but light reflected off of or absorbed by marked surfaces is used to collect vote data).

digital signature

An asymmetric key operation where the private key is used to digitally sign an electronic document and the public key is used to verify the signature. Digital signatures provide data authentication and integrity protection.

direct record electronic (DRE)

The term for an electronic machine at which a voter can view, vote, and cast a ballot.

district

A selection of precincts and/or split precincts that determine a voting group.

DRE

See direct record electronic (DRE).

duplex

Two-sided. In Verity ballots are printed and scanned on both sides of the ballot sheet. The Verity Scan scans both sides of the ballot sheet.

duplicate ballot

If a jurisdiction chooses to include unique identifiers on their printed ballots, Verity will search the database for an identical unique identifier every time a ballot is scanned, and disallow the ballot if it is a duplicate.

early voting

A term for votes cast in-person prior to election day. Nomenclature for early voting varies from state to state in the U.S. (absentee in-person, absentee walk-in, etc.).

election

A formal process of selecting a person for public office or of accepting or rejecting a political proposition by voting.

Election Assistance Commission (EAC)

Federal agency created by HAVA and chartered with, among other things, overseeing the testing and certification of voting systems.

election database

In Verity Data and Build, a data file or set of files that contain information about political subdivisions and boundaries, all contests and questions to be included in an election, and the candidates for each contest.

election day

A specific day, set by federal or state statute, when voting takes place and results tabulation and reporting begins.

election ID

An identification code assigned to an election by Verity Data and Build that is unique for every election. The election ID is used internally by the software applications.

election management system (EMS)

A set of processing functions and databases within a voting system that define, develop, and maintain election databases; perform election definition and setup functions; format ballots; count votes; consolidate and report results; and maintain audit trails.

election preferences profile

A profile that retains jurisdiction-specific preferences concerning election rules and settings. The purpose of the profile is to minimize a user's need to keep re-entering data that is applicable to most of the user's elections. Information stored in an election preferences profile typically does not change frequently, and the profile is user-editable.

emergency ballot slot/emergency ballot bag

A special receptacle in the Verity ballot box, with its own unique access door, that can be used to securely store unscanned ballots.

EMS

See **election management system (EMS)**.

encryption

Process of obscuring information by changing plain text into cipher text for the purpose of security or privacy. *See also* **cryptology**.

firmware

Computer programs (software) stored in read-only memory (ROM) devices embedded in the system. A Verity device's firmware version is displayed on the Power On Self Test report.

functionality test

Testing of hardware functionality (e.g., testing to see that a Verity Access button responds correctly when pressed). Functionality tests are built into the Verity voting devices.

general election

Election in which voters, regardless of party affiliation, are permitted to select candidates to fill public office and vote on ballot issues. In the U.S., federal general elections are held on the first Tuesday after the first Monday in November, in every even-numbered year.

graphic user interface (GUI)

The human-computer interface in software applications.

hash testing

A test run to check that installed software has not been altered since its initial installation. The installed software is compared against a 'trusted build' of the software that has been certified by a regulatory agency.

Help America Vote Act (HAVA)

Signed into law October, 2002, HAVA intends to assist states in the administration of federal elections and establishes 'minimum standards for states and units of local governments with the responsibility for the administration of federal elections.' Most importantly, HAVA mandates that each polling place in the United States have a federally approved handicap accessible voting system.

help button

Button on the Verity Access; when pressed, the Verity Touch or Touch Writer screen will display contextual help text.

incomplete ballot

A multi-sheet ballot being scanned in a scan batch that is missing one or more, but not all, sheets.

invalid vote

An instance where a voter in an open primary has voted for a candidate for an opposing party after first declaring affiliation with another party.

key management

Activities involving the handling of cryptographic keys and other related security parameters (e.g., access to the physical keys and passwords) during the entire life cycle of the keys, including the creation, inventory and storage, re-writing, and use of the keys throughout an election cycle.

lifetime count

A number, shown on the Verity device touch screens, that indicates how many ballots (Cast Vote Records) have been voted on the device over its lifetime. The lifetime count cannot be reset.

logic and accuracy test (LAT or L&A)

In the context of an election, a test to check the accuracy of the voting system tabulation. An LAT is accomplished by submitting test ballots for which the results are already known (i.e., a 'test deck') through the ballot counting system and comparing the results with the expected results. If an error occurs (i.e., the actual test deck count does not match the expected count), then the problem is investigated and corrected, and the test is repeated.

move wheel

The rotary wheel on the Verity Access that allows a voter to navigate the ballot and highlight choices by turning the wheel.

multi-seat contest

Contest in which multiple candidates can run, up to a specified number of seats. Voters may vote for no more than the specified number of candidates.

non-partisan office

An elected office for which candidates run independent of political party affiliation.

nonvolatile memory

Memory in which information can be stored indefinitely with no power applied. ROM is an example of nonvolatile memory.

open polls report

Report printed by the Verity voting device when the polls are opened. This report includes a time stamp indicating the date and time printed.

open primary

Primary election in which any voter can participate, regardless of their political affiliation. In the U.S., states that have open primaries do not require voters to register by party. Some states require voters to publicly declare their choice of party ballot at the polling place, after which the poll worker provides or activates the appropriate ballot. Other states allow the voters to make their choice of party ballot within the privacy of the voting booth.

option

A choice on a ballot.

option box

The target area where a voter marks in order to make a selection on a ballot.

overvote

An instance where a voter has marked more than the allowed number of options for a given contest. On the Verity Touch or Touch Writer it is not possible to overvote.

page

In reference to paper ballots, one side of sheet of paper.

paper-based voting system

Voting system that records votes, counts votes, and tabulates the vote count, using one or more ballot cards or paper ballots. In some regions, the term paper ballot is equivalent to hand counted ballot.

partisan office

An elected office for which candidates run as representatives of a political party.

party

A political party, for example Democratic or Republican.

political subdivision

Any unit of government, such as counties and cities, school districts, and water and conservation districts having authority to hold elections for public offices or on ballot issues.

poll worker button

A button located on the back panel of the Verity device used to access poll worker and administrator functions.

polling location

Physical address of a polling place.

polling place

The area within the polling location where voters cast ballots. Sometimes, a single polling place supports several precincts.

power on self test report

A report printed from the Verity voting device any time the device is powered on. This report shows a time stamp, firmware version, and diagnostic test result. A self-diagnostic test is run on the system, and the result is indicated as either a pass or fail on the report.

precinct

Election administration division corresponding to a contiguous geographic area that is the basis for determining which contests and issues the voters legally residing in that area are eligible to vote on. In traditional election nomenclature, precinct was once equivalent to polling place. This is not necessarily the case any longer.

primary election

Election held to determine which candidate will represent a political party for a given office in the general election.

primary presidential delegation nomination

Primary election in which voters choose the delegates to the presidential nominating conventions allotted to their states by the national party committees.

provisional ballot

A ballot provided to individuals who claim they are eligible to vote but whose eligibility cannot be confirmed when they present themselves to vote. Once voted, such ballots cannot be included in the tabulation until after the voter's eligibility is confirmed.

race

A choice to be made on the ballot; a contest. Race types include offices, issues, referendums, measures, and propositions.

ranked choice voting

Practice that allows voters to rank candidates in a contest in order of choice 1, 2, 3, and so on. A candidate receiving a majority of the first choice votes wins that election. If no candidate receives a majority, the last place candidate is deleted, and all ballots are counted again, with each ballot cast for the deleted candidate applied to the next 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. The practice is also known as instant runoff voting, preferences or preferential voting, or ranked order voting.

recount

Re-tabulation of the votes cast in an election.

referendum

Process whereby a state law or constitutional amendment may be referred to the voters before it goes into effect.

replacement ballot

A ballot that is designated by the election authority to be a replacement for a damaged ballot.

resolution

See **adjudication**.

runoff election

Election to select a winner following a primary or a general election, in which no candidate in the contest received the required minimum percentage of the votes cast. The two candidates receiving the most votes for the contest in question proceed to the runoff election.

sample ballot

A ballot printed as a sample of the real election ballot. Sample ballots contain a special barcode which prevents them from being counted by the Verity system.

security controls

Management, operational, and technical controls (such as safeguards or countermeasures) prescribed for an information system to protect the confidentiality, integrity, and availability of the system and its information.

security seal

Tamper-evident seals put in place by the jurisdiction on voting devices and ballot boxes to restrict access to voted ballots and compartments containing voted ballots.

select button

Button on the Verity Access; a voter presses this button to select an option or ballot choice highlighted by the move wheel.

sheet

In reference to paper ballots, one piece of paper printed on both sides, i.e., duplex.

sheet count

On the Verity Scan device, a number, shown on the touch screen, that indicates how many physical ballot sheets have been scanned on that device for the current election. The sheet count of a device is reset to zero when a new election is loaded by election staff before an election.

sip-and-puff

A voter's personal input device that connects to the Verity Access using the disabled access jack. This enables disabled voters with extremely limited mobility to vote with a mouth-controlled device.

software license

The right-to-use a software (or firmware) application.

split precinct

When a precinct is divided to accommodate non-standard division of boundaries within it (i.e. when sub-jurisdiction districts affect the ballot styles within a parent jurisdiction precinct).

spoiled ballot

A ballot that has been rendered invalid, either by a voter who is still present at the polling place (making it necessary to give the voter a new ballot) or by virtue of being abandoned by the voter. *See also* **abandoned ballot**.

straight party voting

A voting method that presents a contest at the top of the ballot that allows selection of a single political party in order to automatically select candidates of that party in contests that allow straight party voting.

stub number

A number that can be placed on the ballot stub. In Verity, the stub number is not tied to the ballot number.

suspend polls report

A report that automatically prints when suspending polls during early voting.

system audit log

Captures system-specific information, such as operating system login or logout and operating system alerts, faults, and failures (that is, running on battery).

system battery

Rechargeable battery pack used in Verity voting devices.

tabulation

Process of totaling votes. *See also* **count**.

tactile switches

Also called 'dual mode switches,' or 'jelly switches,' these red and green 'paddles' enable voters with disabilities to vote without using the touch screen, move wheel or select button on the Verity Access. Voters without fine motor control may use these. The red tactile switch allows voters to navigate through the ballot, similar to turning the move wheel in a clockwise direction. The green switch is similar to pressing the select button.

tally report

An report that may be printed from a Verity voting device after polls are suspended closed. It includes the date, time, precinct, a tally of votes for each contest, and an access code or ballot summary. Use of this report may vary by jurisdiction.

thermal printer

Roll-feed printer built in to each Verity voting device used to print reports and, on the Controller or Touch Writer, access codes. This printer uses heat to print on the paper, and thus does not use ink or toner.

top-two primary

A primary election in which the top two vote-getters are the winners, regardless of their party preference, and in which all voters vote the same ballot.

touch screen voting machine

A voting machine that utilizes a computer screen to display the ballot and allows the voter to indicate his or her selections by touching designated locations on the screen.

undervote

An instance where the number of choices selected by a voter in a contest is less than the maximum number allowed for that contest, or when no selection is made for a single choice contest.

uninterruptible power supply (UPS)

A device that maintains AC power for a connected device during a power outage.

unique identifier

A number placed on the sheets of a ballot that uniquely identifies the ballot in order to prevent scanning of duplicate paper ballots. Within the Verity system, unique identifiers are optional and cannot be tied to an individual voter (as there is no individual voter data in the Verity system). Unique identifiers contain no serial (i.e. sequential) data.

universal serial bus (USB)

An external peripheral interface standard for communication between a computer and other devices. In the Verity voting system, the vDrive and Verity Key connect to a USB port.

usability

Effectiveness, efficiency, and satisfaction with which a specified set of users can achieve a specified set of tasks in a particular environment. Usability in the context of voting refers to voters being able to cast valid votes as they intended quickly, without errors, and with confidence that their ballot choices were recorded correctly. It also refers to the usability of the setup and operation in the polling place of voting equipment.

Verity Access

Verity's audio-tactile interface device.

Verity Build

Verity ballot production software. Build allows you to review and proof ballots, print ballots, and generate vDrives and Verity Keys for running the election.

Verity Central

Verity vote resolution software. Central processes high volumes of paper ballot scanning to compile and send to Verity Count for tabulation and results.

Verity Controller

Verity polling place device for issuing access codes for and managing Verity Touch direct record electronic voting devices.

Verity Count

Verity vote tabulation software. Count receives, reads, aggregates, and reports on election results. The system analyzes results, providing deeper details based on specified options such as the types of votes and elections.

Verity Data

The Verity application used to manage data such as ballot content, ballot formats, and ballot style previews.

Verity Key

Verity election cryptographic module. Provides secure authentication of critical actions within the Verity voting system.

Verity Print

Verity device for on-demand selection and printing of paper ballots.

Verity Relay

Verity application designed to receive transmissions from specially-equipped Verity Scan with Relay devices. Transmitted data is written to a transfer vDrive and taken to Verity Count for tabulation.

Verity Scan

Verity polling place scanning device. These devices scan physical printed and marked ballots for collecting and tabulating votes.

Verity Scan with Relay

Verity Scan device modified with Relay modem kit upgrade. Scan with Relay is a Scan device equipped and configured for Relay transmission.

Verity Touch

Verity polling place direct record electronic voting device.

Verity Touch Writer

Verity polling place ballot marking device, with print capabilities for paper ballots.

Verity vDrive

In the Verity system, the electronic media used for transferring of election definitions and data, CVRs, and device audit logs between the Verity software workstations and voting devices.

Voluntary Voting System Guidelines (VVSG)

Standards created by the National Institute of Science and Technology and used by the EAC to test and certify voting systems.

vote center

Sometimes called super precincts or county-wide polling places. A polling place where all or a large set of election precincts and ballot styles are available for voters from a large area to come in-person to vote on election day.

vote drop-off

The difference between the number of people who turned out for an election and the total number of votes cast for a particular office. Sometimes referred to as 'residual votes'. Reasons for vote drop-off may include overvoted or undervoted contests.

vote for n of m

A ballot choice in which voters are allowed to vote for a specified number ('n') of candidates in a multi-seat contest where 'm' is the number of valid choices.

voted ballot

A ballot that has been cast.

voting position

Specific response field on a ballot where the voter indicates the selection of a candidate or ballot proposition response.

voting system

The total combination of mechanical, electromechanical or electronic equipment (including the software, firmware, and documentation required to program, control, and support the equipment) that is used to define ballots, cast, and count votes, report or display election results; and to maintain and produce any audit trail information; and the practices and associated documentation used to identify system applications and versions of such applications; to test the system during its development and maintenance; to maintain records of system errors and defects; to determine specific system changes to be made to a system after the initial qualification of the system; and to make available any materials to the voter (such as notices, instructions, forms or paper ballots).

voting system software

All the executable code and associated configuration files needed for the proper operation of the voting system. This includes third party software such as operating systems, drivers, and database management tools. See also dynamic voting system software, semi-static voting system software, and static voting system software.

Voting System Test Laboratory (VSTL)

An independent test laboratory accredited by the Election Assistance Commission and qualified to test voting systems to approved voting system standards.

warranty

Guarantee that a piece of hardware or software will work to certain standards for a certain period of time.

write-in

A name of a candidate entered by the voter in order to vote for a candidate that is not listed in that contest.

write-in, certified

A candidate that has been certified by the election authority as being a valid write-in candidate for the election.

WYSIWYG

What You See Is What You Get. Term used to describe a visual method of rendering ballot styles, to see an accurate representation of how ballots are laid out.

zero report

A voting device report that must be printed before polls are opened on the first day of early voting and on election day. A zero report must also be printed from the tabulation workstation prior to counting ballots on election day. This report lists the time, the number of precincts at the polling place, the contests and candidates on the ballot, and verifies that the current number of votes for each candidate or option is zero.

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Verity documentation

Verity Software Administrator Guides

These are your go-to guides for software operation and election management using Verity software; there is one guide for each of the major Verity software applications.

6641-009 Verity Administrator's Guide: Data
6641-010 Verity Administrator's Guide: Build
6641-011 Verity Administrator's Guide: Central
6641-012 Verity Administrator's Guide: Count

Verity Support Procedures Guide

Your primary guide to equipment management, functionality testing, warehouse procedures, and voting device tasks and troubleshooting.

6643-002 Verity Support Procedures Guide

Verity Polling Place Operations Guides

Your primary guide for polling place operations, designed with Poll Workers in mind. Includes procedures for setting up equipment, opening polls, assisting voters, and closing polls. Choose the version according to the type of equipment used in your jurisdiction:

6642-002 Verity Polling Place Operations Guide - Scan & Touch Writer
6642-003 Verity Polling Place Operations Guide - Print
6642-004 Verity Polling Place Operations Guide - Controller & Touch

Verity Field Guides

Condensed guides for quick reference in a more portable format. The Poll Worker's Field Guides are condensed versions of the Polling Place Operations Guides; the Troubleshooting Field Guide is a condensed version of the Troubleshooting section of the Support Procedures Guide.

6651-002 Verity Poll Worker's Field Guide - Scan & Touch Writer
6651-003 Verity Poll Worker's Field Guide - Print
6651-004 Verity Poll Worker's Field Guide - Controller & Touch
6653-002 Verity Troubleshooting Field Guide

Verity Training Course Packs

Course packs are available for each of Verity training courses; each course pack include a PowerPoint presentation as well as a trainer's Agenda.

6661-010 Verity Course Pack: Data
6661-011 Verity Course Pack: Build
6661-018 Verity Course Pack: Central
6661-019 Verity Course Pack: Count
6661-012 Verity Course Pack: Polling Place Operations - Scan & Touch Writer
6661-013 Verity Course Pack: Polling Place Operations - Print
6661-014 Verity Course Pack: Polling Place Operations - Controller & Touch
6661-015 Verity Course Pack: Assisting Persons with Disabilities
6661-017 Verity Course Pack: Support Procedures
6661-020 Verity Course Pack: Train the Trainer
6661-021 Verity Course Pack: Management & Best Practices

Verity Knowledge Base

In addition to the core documents listed above, Hart InterCivic is committed to providing a growing knowledge base of articles. Knowledge Base articles are targeted towards specific election-related topics, best practices, and recommended procedures, updated in response to feedback from our customers. For a current list of available Knowledge Base articles, please contact Hart Support at 1 (866) ASK HART.

Hart Support

NOTE: the following contact information is for use by election officials and staff only; poll workers should not be encouraged to call the Hart CSC Help Desk.

Hart Customer Support Center (Help Desk)

1.866.ASK.HART

hartsupport@hartic.com





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