

2009

**BEST**

**PRACTICES**  
**Guide**



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Hart InterCivic is also committed to the integrity and the security of the information used in both the product development process and by the products themselves. Management will establish and maintain an information security management system to ensure contractual requirements are met, employees are trained in information security, and that risks to information security are managed.

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# Table of Contents

<b>Introduction</b> .....	vii
<b>1. General Best Practices</b>	
Overview.....	1-1
Training .....	1-2
Planning .....	1-2
Using Hart Documentation and Resources .....	1-3
Using Hart’s Customer Support Center.....	1-5
<b>2. Security Best Practices</b>	
Overview.....	2-1
General Security .....	2-2
Staffing and Personnel Security.....	2-2
Securing Access to HVS Computers.....	2-3
Software Security.....	2-4
Mobile Ballot Boxes (MBBs) and Security Seals .....	2-5
Securing Delivery of Polling Place Equipment .....	2-5
Securing Access to Physical Facilities.....	2-6
Securing the Voting Devices During Storage.....	2-6
Securing Access to Voting System Devices.....	2-7
Securing the Voting Area .....	2-8
Security During Tabulation .....	2-9
Parallel Testing.....	2-9
<b>3. Election Data Management</b>	
Overview.....	3-1
Storage Media to Use .....	3-2
Archiving Data .....	3-2
Backing up Election Databases .....	3-3
Clearing Off Old Election Data .....	3-5
Managing eCM Signing Keys and Tokens .....	3-6
Managing Third-Party Software and Hardware.....	3-7
<b>4. Ballot Creation &amp; Testing</b>	
Overview.....	4-1
Ballot Design .....	4-2
Mobile Ballot Boxes (MBBs) .....	4-6
Ballot Media Quantities.....	4-7
Election Kits .....	4-9
Consumables .....	4-9
Card Readers .....	4-10

Computer and Equipment Best Practices .....	4-10
BOSS Best Practices .....	4-11
BOSS Tips .....	4-12
Vote Center Administration.....	4-13
Proofing the Ballot.....	4-15
Ballot Folding Impacts.....	4-16
Using TRANS .....	4-17

## **5. Paper Ballots: Printing**

Overview.....	5-1
Introduction to Printing .....	5-2
Printer Maintenance .....	5-2
Hart Official Ballot Paper.....	5-5
Contract Print Vendor Certification .....	5-6
Printing Ballots On-Demand .....	5-7
Printing Ballots to File .....	5-7
Ballot Quality Control.....	5-8
Using a Print Queue and Ballot Now Print Server.....	5-10
Custom Ballot Stubs .....	5-12
Printing Foreign-Language Ballots with Images.....	5-13

## **6. Paper Ballots: Ballot Now Operations**

Overview.....	6-1
Increasing Voter Education and Awareness .....	6-2
Scanner Set-Up.....	6-2
Adjusting Scanners for Paper Weight .....	6-3
Scanner Cleaning and Maintenance.....	6-4
Items Affecting Scanner Operations .....	6-4
Ballot Preparation for Scanning (Ballot Review Board Best Practices) .....	6-11
Scanning Ballots and Batch Management.....	6-13
Ballot Resolution.....	6-16

## **7. Paper Ballots: eScan Operations**

Overview.....	7-1
Counting Ballots with eScan.....	7-2
eScan Warehousing .....	7-3
Transportation and Storage.....	7-4
At the Polling Place .....	7-4
Maintenance .....	7-5

## **8. Voting Equipment Management**

Overview.....	8-1
SERVO Best Practices.....	8-2

Predefining .....	8-4
Voting Device Management.....	8-6
Election Night Equipment Receipt.....	8-10

## 9. Polling Place Operations & Support

Overview.....	9-1
Pollworker Training.....	9-2
At the Polling Place .....	9-4
Reducing Lines at the Polling Place .....	9-7
Setting up Help Desk/Polling Place Communications...	9-9
Setting Up Field Technician Support Operations.....	9-10

## 10. Reporting Best Practices

Overview.....	10-1
Rehearsing .....	10-2
Tally Best Practices .....	10-2
Tally Reporting.....	10-3
Reading MBBs .....	10-3
Rally/Tally Communication.....	10-5
Fusion Operations .....	10-5
SERVO Reporting .....	10-8

## Appendices

<b>Appendix A:</b> HVS Documentation List.....	A-1
<b>Appendix B:</b> Parallel Testing Procedures .....	B-1
<b>Appendix C:</b> Ballot Printer Configuration .....	C-1
<b>Appendix D:</b> Creating a Print Queue File .....	D-1
<b>Appendix E:</b> Importing Registered Voters Totals into Tally .....	E-1
For Systems 6.0–6.1 .....	E-1
For HVS System 6.2.1 .....	E-1
<b>Appendix F:</b> Ballot Graphic Specifications for BOSS, System 6X...F-1	
<b>Glossary</b> .....	1
Acronyms.....	1
Terminology.....	4



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# Introduction

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When election time comes, all eyes are on you. Does the voting process run smoothly? Are citizens confident in its integrity and security? Years of decision-making, and months of planning and preparation culminate in a day whose success matters to you, your elections team, your jurisdiction, and the nation.

Managing elections is a big job. This Best Practices Guide from Hart InterCivic brings together proven practices that can help make the job easier and your election events trouble-free.

For more than a decade, our elections experts have worked side-by-side with hundreds of Hart Voting System (HVS) customers conducting thousands of elections to ensure that every vote counts. This Guide represents the knowledge gained – both by Hart’s team and by the Hart user community—about what works to produce successful elections. By sharing these best practices, we can work together as a community to provide the most efficient, effective, secure, and accurate elections possible.

An essential element of Hart’s Best Practices Suite, the Best Practices Guide is organized around nine key components of the election process. From establishing security policies and procedures, to preparing and testing ballots, to mapping out polling place operations, to setting up Election Night

reporting, the Guide provides stand-alone chapters full of practical, tested techniques to help you plan for your next election event. It enables you to:

- Plan the best manner in which to operate your voting system and software
- Navigate quickly to the information or support you need within the wealth of documentation and resources Hart provides
- Run better, more worry-free elections that meet the needs of your voters

This document is being released in tandem with a host of professional services, many of which are new. These services provide the added assurance that every aspect of your election is handled correctly. Let our ElectionReady team of trainers, project managers, and technical consultants help you conduct flawless elections and sustain your voting system into the future. Here are some of our new offerings:

- **JBC Preventative Maintenance**
- **eScan Preventative Maintenance**
- **eScanReady Calibration Service**
- **Kodak® and Fujitsu® Scanner Preventative Maintenance**
- **Professional Elections Processes Consultation**
- **Customized Training Courses**
- **Election Data Management**
- **Refresher Training** and **New Staff Training** for:
  - Ballot Programming
  - Ballot Now and Paper Ballot Management
  - Tally Tabulation and Reporting
  - Election Day procedures for equipment management and tabulation
  - Train-the-Trainer for poll worker training
- **Onsite Support**
  - Election Planning
  - Equipment preparation
  - Logic and Accuracy Testing (LAT)
  - Election Day Support
  - Post-election Processing
  - Warehouse Consultation
  - Security Consultation

- **Poll Worker Training**
- **Help Desk Operator Training**
- **Field Technician Training**
- **Advanced Training “Boot Camp”**
- **Ballot Design Service (BDS)**

Hart InterCivic shares your commitment to excellence. Through our Best Practices Suite, we offer documentation, professional training, consulting, and support services to promote excellence in each component of the election process.

### Icons Used in this Guide

Throughout the Best Practices Guide icons are placed in the margins to help identify and classify external resources. These are the icons you will see and their meanings:



Indicates an HVS Document. The noted document is available to you in at least one of these places:

- The Hart Customer CD provided during the initial implementation
- The CD accompanying this Best Practices Guide
- TeamTrack



Indicates a service offered by Hart. The available services are listed in the previous section.



Indicates an occasion to call (866) ASK-HART [(866) 275-4278] for more information or to speak with a Customer Support Center (CSC) representative.



Indicates an occasion where Hart Training would be needed, or there is a Training program designed for that occasion.



Indicates parts or supplies that can be ordered from Hart (generally through the Hart catalog—available at [www.hartic.com/pages/221](http://www.hartic.com/pages/221)).





## Overview

A “best practice” is a procedure or set of procedures not required by statute or other authority but recommended by Hart to help enhance security or make most efficient use of the Hart Voting System (HVS).

This first chapter outlines general best practices used over a wide range of election functions. The following sections contain information about training availability, planning, and using Hart’s lauded collection of reference material, Customer Support Center (CSC) and TeamTrack resources.

## Training



Staff and poll worker resources change from election to election and year to year. Training staff using Hart's Professional Service Training is "training from the source," which allows you to:

- Avoid knowledge gaps.
- Include additional staff in training sessions as backup resources or to just take refresher courses.
- Get the latest knowledge from Hart.
- Merge internal procedures and processes with Hart curricula.

## Planning

Election planning starts months in advance of Election Day and includes both the tasks that are repeated every election cycle (e.g., purchasing ballot paper) and those that may be unique to a particular election (for example, utilizing Vote Centers, capably handling increased by-mail turnout, long lead-time, and seldom ordered supplies).

Planning must include, at a minimum:

- Training personnel
- Ordering consumables at least 6 weeks in advance
- Maintaining printers
- Maintaining scanners
- Maintaining and preparing HVS equipment
- Clearing off old election databases from HVS computers
- Defining and implementing security policies
- Performing Logic and Accuracy Tests, hash code tests, and Parallel Testing
- Delivering equipment
- Preparing polling places
- Executing tabulation procedures
- Preparing for audits and recounts
- Completing the Canvass process

## Using Hart Documentation and Resources

At Hart we truly believe that we offer the best customer service in today's voting system market. Furthermore, we offer the most detailed documentation in the business. Because the volume of documentation may be overwhelming, we offer this guide to assist in its use.

**Operations Manuals** provide detailed function-by-function descriptions of the Hart Voting System software applications.

- Operations Manuals were written and released in conjunction with the software. These manuals are useful for answering questions like "What does that button on the software interface do?" or, "How do I accomplish this action in the Hart software?" If you are "stuck" while conducting a certain function with Hart software, try looking in the Operations Manual first.

**Training Manuals** are step-by-step documents that walk through the process of creating an election.

- Training Manuals were written and released in conjunction with the software. These are guides for training new employees and reminders for those who have been through formal training. Training Manuals often contain procedural details that Operations Manuals do not.

**Desk references** are poll workers' guides for operating the polling place equipment.

- There are many variations on the Desk References, depending on the specific configuration of polling place equipment used by a jurisdiction. The Desk Reference is not only a tool for poll worker training, but is a must-have Election Day (or Early Voting) reference at the polling place.

**Quick References** are short versions of Desk References.

- These documents have been tailored for a specific voting environment. The benefit of a Quick Reference is that it contains less information for the poll worker to sort through in order to find a process.

**The Best Practices Digest** is the predecessor to the document you are now reading. The Digest is now out of publication.

**The Best Practices Guide** is the document you are now reading.

**The Election Event User Guide (EEUG)** is a step-by-step guide that was specifically written for our Ballot Production Services (BPS) customers, but is also useful to any customer.

- The EEUG takes the user through every element of the election sequentially, from submitting information to BPS consultants for ballot layout, to tabulation and reporting. The EEUG is a single source with a simplified “Election A-Z” step-by-step list for these Hart customers.

**Training Bulletins** are the first generation of Service Bulletins.

- These documents give information on how to avoid issues, as well as manage difficult situations and run a successful election. Document releases are dated in the filename and on the document itself.

**Service Bulletins** are released when a repeating pattern of inquiry occurs in our customer base concerning an issue with the voting system.

- Service Bulletins give information on how to avoid issues, manage difficult situations, and effectively run a successful election. Document releases are dated in the filename and on the document itself.

**Knowledge Base Articles** are issued when a need for a detailed recommended Best Practice is identified.

- Knowledge Base articles are usually related to pressing events and include details on how to perform prescribed Best Practices. Document releases are dated in the filename and on the document itself.

**Delta Documents** are “change” documents detailing the differences from one release of the Hart Voting System to another (e.g., System 6.0 to 6.2.1).

- The purpose of the Delta documents is to provide information about new features and differences with a software or firmware upgrade from Hart.



*All Hart documentation can be found using the TeamTrack Knowledge Base. Contact the CSC at (866) ASK-HART [(866) 275-4278] for assistance accessing this information.*



*For a full listing of all Hart Voting System documentation, see [Appendix A: “HVS Documentation List.”](#)*



## Using Hart's Customer Support Center

Hart InterCivic includes Customer Support Center (CSC) phone support and a web-based help and tracking service for every customer. With these services, our customers have a consistent source for real-time help from a knowledgeable Hart technician. Customers also have easy access to information about help calls and the status of the related issues.

## Our Philosophy

We create win-win relationships with our customers by providing solutions that help customers to be successful. We deliver what is promised, when it is promised, at the high level of quality that is expected from Hart InterCivic.

### How Do Customers Contact Hart for Help?

Customers may contact the CSC in several ways:

1. Call the CSC: (866) ASK-HART [(866) 275-4278]
2. Send an e-mail to [hartsupport@hartic.com](mailto:hartsupport@hartic.com).
3. Submit a TeamTrack ticket at the URL:  
<http://hartsupport.hartic.com>.
4. From the Hart website at <http://www.hartic.com/pages/13>.
5. Fax a request to (512) 252-6925.

### What are the hours of operation for help services?

The CSC's hours of operation are 7:00 a.m.–7:00 p.m. Central Time, Monday through Friday. CSC operators will be available during these hours. Hart will inform you of extended support hours during peak times, or you can request extended hours during YOUR peak times. TeamTrack tickets may be submitted at any time.

### What Is TeamTrack?

TeamTrack is a web-based tracking application Hart InterCivic uses for logging and managing system issues, service requests and enhancement requests. TeamTrack keeps a database of all logged tickets submitted. Customers may view all of their organization's submitted issues, service and enhancement requests.

With TeamTrack, each submitted ticket has an owner. The owner is the Hart resource responsible for the ticket during that stage. The person who submitted the ticket may be notified by email when the ticket is updated by Hart personnel. The person who submitted the ticket will also be notified by a Hart representative when a ticket is resolved and/or when it is closed.

**Using TeamTrack**

Customers may also log in to TeamTrack to access Hart Voting System documentation from the TeamTrack Knowledge Base, or submit requests for equipment repair.

- Log in at <https://hartsupport.hartic.com>.
- For help navigating TeamTrack, visit the Knowledge Base by following <https://hartsupport.hartic.com/tmtrack/tmtrack.dll?IssuePage&Template=problemframe&TableId=41&RecordId=251>.
- To obtain new login credentials, or if you have forgotten your user name or password, contact the CSC.
- Once logged into TeamTrack, passwords can be changed by clicking on your name at the top of the page.
- If entering multiple issues into TeamTrack, always submit a separate ticket for each issue.
- Use the ID Search field to find tickets by incident number.
- Contact the CSC to obtain a TeamTrack User Manual.





## Overview

As elections professionals—administrators, central office staff, warehouse personnel and poll workers—you are responsible for maintaining the security and integrity of the voting process, and for protecting Hart Voting System (HVS) equipment and supplies.

By frequently monitoring and systematically testing HVS computers, voting machines and voting supplies, you not only protect against malicious attempts to compromise the accurate gathering and reporting of the vote, but you also protect against voting errors or damage to equipment, all of which instill public confidence in voting procedures and results. Consistently following security procedures creates a secure environment and prevents the perception of fraud.

The following chapter contains procedures based on customers' experiences and Hart-developed practices to ensure that HVS equipment and the voting process are secure at all times.

## General Security

- Assign a lead staff member to develop a written and actionable Election System Security Plan.
  - Include a list of risks, and mitigations for each listed risk.
- Describe specific security measures to include in staff training.
- Include disaster recovery steps in the Security Plan.
- Review and update the Security Plan annually.



*Hart offers a Security Consultation Service to assist with developing and streamlining a Security Plan tailored to your specifications.*

## Staffing and Personnel Security

To help ensure maximum security:

- Perform a criminal background check on all staff and temporary employees as part of the employment process.
- Require that identification badges be worn at all times. Provide a temporary identification badge when visitors, system providers, maintenance personnel, and other non-staff individuals enter election office work areas. Log entry and exit dates and times, and the purpose of the visit.
- Have all regular staff and temporary employees take an oath of office or go through a deputization process to uphold the integrity of the election.
- Require that all staff and temporary employees receive formal training for their roles, including a section on security processes.
- Use teams of two for all voting system-related processes.
- Use sign-in sheets for all voting system areas. Monitor sign-in sheets as part of a regular and systematic security review.
- Implement specific procedures for monitoring the work of each person who has access to the voting system, including election office staff, system provider personnel, and office visitors.
- Require positive identification of each person who requests access to the voting system and keep a log of everyone who accesses the voting system. Include the person's name, the purpose of the access and why it was necessary, the date and time the access begins, and the time the access ends. The entries in this log must be very specific; for example, "System Maintenance" is not an acceptable entry.

- Control the access of vendor personnel to your system until you are absolutely certain that any change, upgrade, or maintenance has already been approved by the federal and/or state certification authority. Never allow vendor personnel access to the voting system without a member of the election staff present.

### Securing Access to HVS Computers

- Use two-person control procedures (i.e., the “buddy system”) when accessing HVS computers. Authorize one person to know and enter the user name and password required to start the Windows operating system, and authorize a different person to know and enter the user name and password required to start specific HVS applications (e.g. BOSS, Ballot Now, Tally, etc.).
  - Have members of the election staff work in pairs. This will greatly reduce the potential for accidental errors and opportunity for deliberate mischief or fraud by a rogue employee.
- Designate a password administrator. The password administrator performs the following duties:
  1. Identifies access-levels for application users, and assists in adding users.
  2. Maintains in a secure location a master list of all administrator-level user names and passwords that are issued.
  3. Reviews application logs to monitor application usage.
  4. Oversees the periodic changing of passwords.
- Issue passwords only to authorized elections employees, and only for performing authorized functions on the voting system.
- Change user names and passwords in each application at random times at least twice a year. Delete out-of-date users.
- Ensure two authorized users are present any time the Tally application is open.
- Review HVS application audit logs and the Windows event logs throughout the election process to detect any suspicious or unauthorized activity.
- Print and review application audit logs as part of the post-election canvass audit process.



- Use surveillance cameras, motion sensors and other advanced means to monitor both access and usage of HVS computers for additional security.
- Keep HVS computer equipment in locked facilities, and use a log to monitor access.
- Cover and seal all unused connections on the voting systems, devices, and hardware, including USB, parallel, and other ports.
- Log and limit access to eCM tokens. ▶
- Remove eCM tokens from equipment when not in use.
- Maintain an accurate inventory of all voting system computers and peripherals by make, model, location and serial number.



## Software Security

- Perform Hash Code Testing before and after every election, and after Hart has performed any maintenance on voting system computers.
  - Ensure that the software installed on the voting system is the unmodified version that has been certified by your state, the National Association of State Election Directors (NASED), and/or the Election Assistance Commission's (EAC) Voting System Testing and Certification Program. If you have any reason to suspect that the voting system software has been compromised, verify the software hash codes.
- If at any time it is necessary to reload HVS software, ask your State elections office or your system provider to uninstall and reinstall software. Verify versions and hash codes after the reinstall.



*For details about verifying hash codes, see Knowledge Base Article #4: "Hash Code Testing."*

- Allow only Hart-approved third party software applications on the vote-tabulating computer. Networking software, such as e-mail and web browsers, are not to be used.
- Do not connect the voting system to any external network.
- Be familiar with the content of device and software audit logs.
- If using Rally, consider any results transmitted electronically from the precinct to the central office to be "unofficial" until they are verified against the results contained on the media that are physically transported to the central office.

- Perform Logic and Accuracy Testing for each election before mailing ballots.
- Perform Parallel Testing during each election event.

*For instructions on how to perform Parallel Testing, see [Appendix B: "Parallel Testing Procedures."](#)*

### **Mobile Ballot Boxes (MBBs) and Security Seals**

- Maintain an accurate inventory of MBBs.
- Keep MBBs secured at all times.
- Secure MBBs within the JBC or eScan MBB compartment with a tamper-evident security seal.
- Record JBC and eScan serial numbers, as well as security seal numbers, during official election events so deployed equipment can be physically authenticated at the polling place.
- At the end of Election Day, follow local procedures to transport the JBC, eScan and/or MBBs from the voting location to the jurisdiction elections office by a sworn election official or a law enforcement officer.
- Establish procedures to secure the JBC, eSlate booths, and eScan each day after suspending polls. eSlate booths may be sealed, locked and/or chained, and paper ballot marking booths may remain assembled.

### **Securing Delivery of Polling Place Equipment**

- Conduct the delivery of voting equipment to polling place locations with the same degree of control as applied to warehouse storage of sensitive election equipment.
- Require that the delivery person or company (or in some cases the supervising poll worker) use a chain-of-custody document that contains the JBC, eSlate and eScan device serial numbers, and security seal numbers for each voting location where equipment has been delivered.
- Use the chain-of-custody form in triplicate. Delivery personnel may require training on its proper use.
- Only use lockable buildings or locations that are capable of monitoring the secure storage of voting equipment at polling places.
- Tightly strap all equipment being delivered in place both horizontally and vertically inside delivery vehicles to avoid damage to the voting units (in-transit damage may appear to be a security violation, when in fact it is simply the mishandling of equipment).
- Always keep doors on delivery vehicles locked when unattended.

## Securing Access to Physical Facilities

- Review voting equipment storage and work areas to ensure that only authorized personnel have access to them.
- Maintain a list of personnel with keys or electronic access badges to election office work areas and voting equipment storage locations. Ensure all keys are accounted for and only authorized personnel have keys.
- Document the controlled physical access to voting systems and the facility where the systems are stored. Document all security-related repairs and modifications to the physical components of the facility where voting systems are stored.
- Develop and apply procedures and policies requiring that keys or combination locks be changed periodically.
- Review election office work areas to ensure that office space is appropriately visible and that undetected access by unauthorized individuals is not possible.
- Preview polling places and identify secure areas for equipment drop-off, storage and pickup.
- Ensure that blank ballot paper stocks are controlled at all times.
- Have an impartial third party conduct a security review and establish and implement applicable election management system security measures. Resources might be found in county and municipal information technology staff or local community college or technical school staff.

## Securing the Voting Devices During Storage

- Use security cameras in the voting system storage facility.
- Use a secure access system and limit the number of keys or access badges to the voting system storage facility.
- Use a burglar and fire alarm system in the storage facility. Periodically test their functionality.
- Use chain-of-custody forms when transporting equipment for any reason.
- Verify that all voting devices are returned to storage after each election; confirm that the device seals have not been tampered with during transport and sign the chain-of-custody document upon receipt of the voting devices.
- Maintain an inventory of election materials, including voting devices, MBBs and Audio Cards, security seals, voter registration (poll) lists, election results tapes and printouts, field supervisors' reports, poll workers' daily logs, reconciliation reports, audit data, and other items.

- Store voting equipment on racks, off the floor. Cover racks to protect voting devices from water damage from above (e.g., leaking roofs) and below (e.g., building flooding).
- When returning equipment to Hart for repair, seal the inner box with serialized tamper-evident tape, log the seal number on the chain-of-custody form, and use an outer shipping box.



*For complete return delivery procedures, see Knowledge Base Article #10: "Return Merchandise Authorization Process."*

- When equipment is returned from repair, perform acceptance testing within 10 business days to confirm functionality and firmware version. Perform hash code testing to confirm that the certified firmware has not been compromised.
- Maintain an accurate inventory of all voting system equipment by type, location and serial number.

## Securing Access to Voting System Devices

### The JBC, eScan and Ballot Box

- Prior to the Early Voting period or Election Day, maintain polling place devices under the chief election officer's close supervision at all times.
- Require the lead poll worker to verify the numbers of all seals or tamper-resistant tape on all voting devices and inspect the voting devices for any evidence of tampering.
- Require the lead poll worker and all poll workers to use and sign a checklist to verify that all opening procedures were followed.
- Control access to the voting device power control, power supply, and election results storage media.
- Maintain a physical barrier between the voter and the JBC to limit unauthorized access.
- Arrange the polling place with the exterior of each voting device in plain view of the poll workers at all times.
- Allow only poll workers and registered voters in the voting device area. Allow voters to enter this area only when a voting device is available for use.
- Train lead poll workers to operate ballot activation devices (e.g., the JBC or the eScan).
- Treat the JBC with the same sensitivity as you would a secure ballot box containing paper ballots.

- Never leave the JBC or eScan unattended at any time (e.g., in an automobile, an unlocked room, etc.).
- Only break or remove the security seal from the JBC or eScan in strict accordance with close polls or central count tabulation procedures.
- Throughout the voting day, monitor the JBC, eSlates and eScan closely to protect against malicious tampering.
- Pay especially close attention to ports, cable connections, and external power supplies on voting devices. Do not allow unauthorized persons access to these areas.
- Establish times for poll workers to verify the number of voters processed with the number of votes recorded (the PUB count) on the voting devices. Train poll workers to log and reconcile inconsistencies.

#### **Access Codes and Paper Ballots**

- Before issuing an Access Code or a ballot, ensure that the voter has been properly qualified and is entitled to vote.
- Only issue Access Codes or paper ballots when voting booths are available for use. This helps to prevent Access Codes or paper ballots from being misplaced or fraudulently passed to others.
- In all instances where a voter is re-issued a new Access Code or ballot, follow state and local procedures governing the spoiling and re-issuance of ballots.

#### **Early Voting or Absentee-In-Person Equipment**

- Record the Public (PUB) and Private (PVT) Counts of all devices at the beginning and the end of each voting day using a reconciliation log.
- At the end of each voting day, close and secure all voting devices with tamper-evident seals. Store all devices in a locked location.
- Verify the numbers on all protective seals and public counters before using the voting devices the next day.
- Follow all Election Day voting security Best Practices.

#### **Securing the Voting Area**

- Maintain staffing levels adequate to monitor voting booths.
- Only allow qualified voters, persons assisting voters, and poll workers entrance to the voting booth area.
- Queue the line of voters at the JBC or paper ballot issuing station, not at the voting area. Do not issue voters Access Codes or paper ballots,

or allow them to enter the voting booth area, until a booth is open and available for use.

- Report any suspicious activity in or around voting machines to the local election officer.
- Pay especially close attention to ports on the rear of eSlate booths and keep booth storage compartments closed to restrict access to cables. Do not allow unauthorized persons access to these areas.
- Monitor the security and integrity of all eSlate system cable connections, to ensure that voting will not be disrupted because the daisy-chain is inadvertently broken. Ensure that all thumbscrews on cable connections are firmly tightened (finger-tight, to prevent stripped screws), and locate cables where they will not be tripped over, pulled upon, or otherwise disturbed.

### **Security During Tabulation**

- Return JBCs and eScans containing storage media (MBBs) to the central counting facility sealed, or use a numbered, sealed pouch to transport storage media from the polling place to the local election office or designated collection point.
- As equipment is returned, use the chain-of-custody document to verify seals and serial numbers.
- As MBBs are read into Tally, verify the number of Cast Vote Records per MBB by cross-referencing with device reports (e.g., Close or Suspend Polls reports).
- Allow only authorized election officials in the tabulation room.
- Allow public viewing of the tabulation room via video feed or large windows.
- Employ uniformed security or police officers to secure the ballot room and voting equipment during tabulation.

### **Parallel Testing**

*The information presented here and in the related appendix is a compilation of data from Travis County, Texas' County Clerk's Elections Division; the Brennan Center; the Government Accounting Office, the State of California; and the Maryland State Board of Elections. We extend our gratitude to these sources.*

The objective of Parallel Testing is to uncover malicious attacks to DRE equipment firmware/software (Parallel Testing is typically not conducted on eScans, since the voter's original ballot is on paper and tests for accuracy

can be done from those original ballots). To perform Parallel Testing, randomly select at least one Early Voting and one Election Day polling location and vote on the equipment for that polling place as realistically as possible during the period that votes are cast. Address and resolve any security questions raised during pre-election testing. Successful Parallel Testing requires an increased effort and will require additional resources and equipment.

### Conducting Parallel Testing

- Conduct Parallel Testing in Election Mode.
- Use randomly selected live election equipment.
  - Perform a random drawing of precinct/polling places to select predefined equipment for the Parallel Test.
  - Equipment configuration for Parallel Test should mirror live election equipment configuration (e.g., if there are three eSlates per JBC in the polling place on Election Day, then three eSlates per JBC should be used in the Parallel Test).
- Conduct all Parallel Testing activities in a secured area.
  - Use a video camera to record all testing activities.
  - Allow only approved personnel access to the testing area.
- Encourage public viewing of Parallel Testing while maintaining security of testing area.
- Perform hash code firmware verification of all election equipment before and after Parallel Testing.



*For details about verifying hash codes, see Knowledge Base Article #4: "Hash Code Testing."*

- Conduct Parallel Testing with a predetermined test plan and test results.
- Have at least two people conduct all Parallel Testing activities.
  - Clearly define roles for each team member in the process.
  - Have team members use a checklist.
- Tabulate Parallel Test results in a separate Tally database just prior to tabulating live election results.
- Back up Parallel Test equipment into a separate event in SERVO.

*For detailed parallel testing procedures, see [Appendix B: "Parallel Testing Procedures."](#)*



## Overview

In election administration we often deal with large amounts of data from many different sources. From source documents used to build the ballot, to BOSS, Tally, and Ballot Now databases themselves, keeping all of that election data properly archived and referenced can pose a challenge. In this section, we list the best practices that have been developed over the years to help you maintain your data in an efficient and safe way. Following these steps will help ensure that all of your critical data is backed up, maintained, and that your Hart Voting System (HVS) computers operate at maximum efficiency.



*For detailed procedures on many of these best practices, see Knowledge Base Article #11, "Backing Up and Cleaning Off Election Databases."*

### Storage Media to Use

Use CD-Rs and DVD-Rs as the primary backup method because they are the most reliable media to use for long-term archival. DVDs are capable of holding about seven times more data than CDs. Your computer may not have DVD writing capabilities, or may only be able to write to CD-Rs. Please consult with Hart for technical specifications and to verify compatibility before purchasing any CD-R or DVD-R writers.



*For assistance with disc-writing procedures, contact the Customer Support Center (CSC) at (866) 275-4278.*

### Archiving Data

Back up election data onto recordable CD-Rs or DVD-Rs using the disc-burning software installed on all HVS computers.

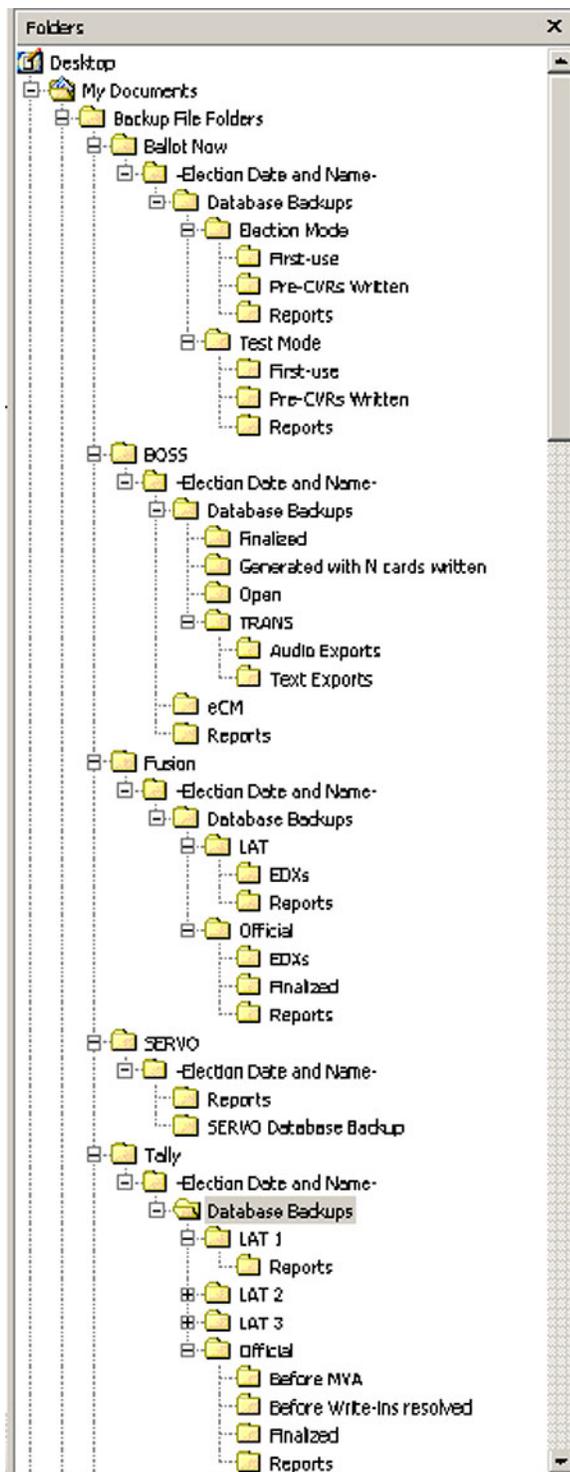
When backing up data:

- Create at least two copies of each CD or DVD. Store one copy offsite.
- Label the surface of the disc—not the jewel case—with a permanent marker.
- Label each disc clearly to avoid confusion. On the disc, write:
  - Application being backed up
  - Name and date of the election
  - What mode or state the database is in
  - Time/date-stamped folder name (if applicable)
  - Date and time of the backup
- Store discs away from direct sunlight, and in a climate controlled room.
- Do not back up data solely to a hard disk drive (internal or external). Hard disk drives can be used for short term data storage during the election event, but should not be used as a long-term archive.

If a database will not fit onto one disc, use file-compression software (such as WinZip) to:

- Shrink the size of the file, or
- Shrink the file and split it into smaller pieces.

Then, write the compressed file(s) to disc(s) using the normal process.



## Backing up Election Databases

During every election cycle, back up election HVS application data at proper intervals to keep databases—and in turn, the entire election—organized. Doing so will enable you to practice proper election data retention and provide quick and easy recovery in the event of disaster.

To organize database backups and storage space, create a backup folder directory template on each HVS computer to use for every election cycle. Once this backup folder directory template is created, save a copy within **My Documents** for future use. This folder template should include the following folders, depending on your configuration:

### BOSS

- Within the BOSS folder, create subfolders for the “Open,” “Generated with Cards Written,” and “Finalized” stages of the database.
- Create additional folders for BOSS exports and TRANS text/audio, and all BOSS reports.
- As you build your BOSS database, back up your work to the appropriate BOSS database folder at each milestone. Do the same with the exports and TRANS folders.

### WHAT TO BACK UP:

Located at **c:\boss\Database\**

Copy the numbered folder associated with the election needing backing up that contains the *BossData.db* and *BossData.cfg* files.

**Tally**

- Create folders to contain each Tally database, as necessary. In most cases, that includes: LAT 1, LAT 2, LAT 3, and OFFICIAL.
- Create sub-folders within each of these folders for both the database and associated reports.
- Save Zero Reports in PDF format before tabulating.
- As results are accumulated throughout Election Night, periodically back up the official Tally database for disaster recovery purposes.
- Name all reports distinctly (*Lat1\_zero\_cum.pdf*, for example) to avoid accidental overwrites.

**WHAT TO BACK UP:**

Located at **c:\Program Files\Hart InterCivic\Tally\Database\**

Copy the numbered folder containing the *TallyData.db* and *TallyData.cfg* files.

**Ballot Now**

- Back up both Test Mode and Election Mode Ballot Now databases. Test Mode databases are folders numbered with the election I.D. followed by a "T" (such as, "023T").
- Make backups of "fresh" (first-time use) Ballot Now databases for disaster recovery purposes before beginning any printing or scanning.
- Create subfolders in the backup folders for all associated Ballot Now reports (Election Report, Scan-Batch Report, Printed Ballot Report, etc.).
- Save your Election Report before scanning ballots for use as a Zero Report for Ballot Now.
- Name reports distinctly to avoid accidental overwrites.
- Update database and reports folders as additional ballots are scanned.

**WHAT TO BACK UP:**

Located at **c:\Program Files\Hart InterCivic\Ballot Now\**

Copy from the "Ballot Now" folder:

- The numbered folder with the election I.D. (e.g., "023," or "023T"),
- *BNsecurity.db*, and
- *BNsecurity.cfg*.

**SERVO**

As a first step in preparing for a new election, copy the backup folder template from **My Documents** to the HVS computer's desktop. Rename the main folder with the name and date of the current election ("11.04.08 General Election," for example).

- Create folders for the SERVO database and all SERVO reports. Name all reports carefully to avoid accidental overwrites (for example, *EV\_backup.pdf*, or *ED\_precinct\_101\_cvr.pdf*). Update all folders as additional events are completed.

**WHAT TO BACK UP:**

Located at **C:\Program Files\Hart InterCivic\SERVO\**

Copy the entire "Database" folder that contains the *ServoData.db* and *ServoData.cfg*.

**Clearing Off Old Election Data**

Clear off old election data to keep your HVS computers working at their optimal functionality. This will free up space on internal hard drives on all HVS computers and allow applications to perform as efficiently as possible. Remove unneeded databases from HVS computers to keep archived databases organized for easy location while working on an existing database.

**What to delete:**

- Only delete prior Official Election data from HVS applications after they have been backed up and properly archived to another media source, such as a CD or DVD, and after verifying that the backup was executed properly. Databases can easily be restored at a later time, if necessary.
- Only delete election data for elections that have been certified or canvassed.
- Delete all databases used for proofing or testing. Multiple revisions of a given election database can easily become confusing and increase the likelihood of mistakes.
- Back up to CD or DVD and archive any training or demonstration database that may be used in future elections. Unless being used for the current election event, delete any training or demonstration databases.

**What not to delete:**

- Anything the State has directed to keep on the native computer.
- Election data or databases for elections that are currently in progress or have not yet been certified.
- Election data or databases that have not been properly backed up to CD or DVD, or have not been properly archived.
- Election data or databases that you may be using for reference in the current election. Retaining BOSS exports and reports from all HVS applications, in addition to up-to-date notes and election procedures is the best and most space-saving method of backup.

**How to delete:**

- Before deleting, identify the folders containing election databases that you want to keep.
  - Remember: BOSS's database folders are named using a time/date stamp convention. For Ballot Now, the folders are named using the database's Election ID.
- Empty the Recycle Bin *before* each election, not after, and only if the data within has been properly archived. Much like resetting equipment, following this procedure will maximize the amount of time the data is available. Once the Recycle Bin is emptied, however, the data can never be recovered.
- Shred—never just discard—all obsolete, sensitive, or excess media before disposal.
  - Purchase a shredder with CD destroying capabilities to dispose of obsolete discs.



*For specific steps on backing up and clearing off data after an election event, see Knowledge Base Article #11, "Backing Up and Clearing Off Election Databases."*



*Hart's Election Data Management service performs the backing up and clearing off of old election data for you.*

## Managing eCM Signing Keys and Tokens

### Terminology

- The eCM "token" is the physical USB device. 
- The "Signing Key" is the encrypted file that resides on the token.
- The "PIN" is the password that is associated with a token.
- The "key file" is a data file with the extension **".ecm"** that contains all the information needed to recreate the Signing Key.



### Security

Physical security of eCM tokens is very important. Only issue tokens to trusted staff members who work with HVS applications and require their use.

- Use a log or sign-out sheet to keep track of eCM token recipients.
- Label each token with an inventory number to track who has which token.
- Remove eCM tokens from all equipment, and secure them when not in use.

Organization of the eCM Signing Key is important as well.

- When creating a new Signing Key, always create a key file for backup purposes.
- Save the key file on a CD or floppy disk, labeled appropriately.
- Use the key file to write the same Signing Key to a different token at a later date.
- If PINs must be written down, keep them stored in a safe location.
  - Remember that when writing a new Signing Key to a token, the PIN used is tied to that particular token. If that PIN is lost or forgotten, the eCM token will have to be rewritten with the original Signing Key.
- If the Signing Key is changed before an election, it is recommended that all eCM tokens be updated with the same Signing Key.
  - BPS customers must notify their Ballot Production Specialist that the Signing Key has been changed *before* BPS can write MBBs.
  - Remember, a new Signing Key must also be programmed to all JBCs and eScans in order for them to accept MBBs written for that election.

### Managing Third-Party Software and Hardware

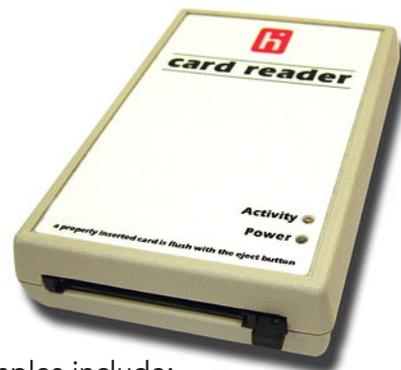


All third-party software and hardware should be purchased through and configured by Hart Technical Services to ensure compatibility with your voting system, such as:

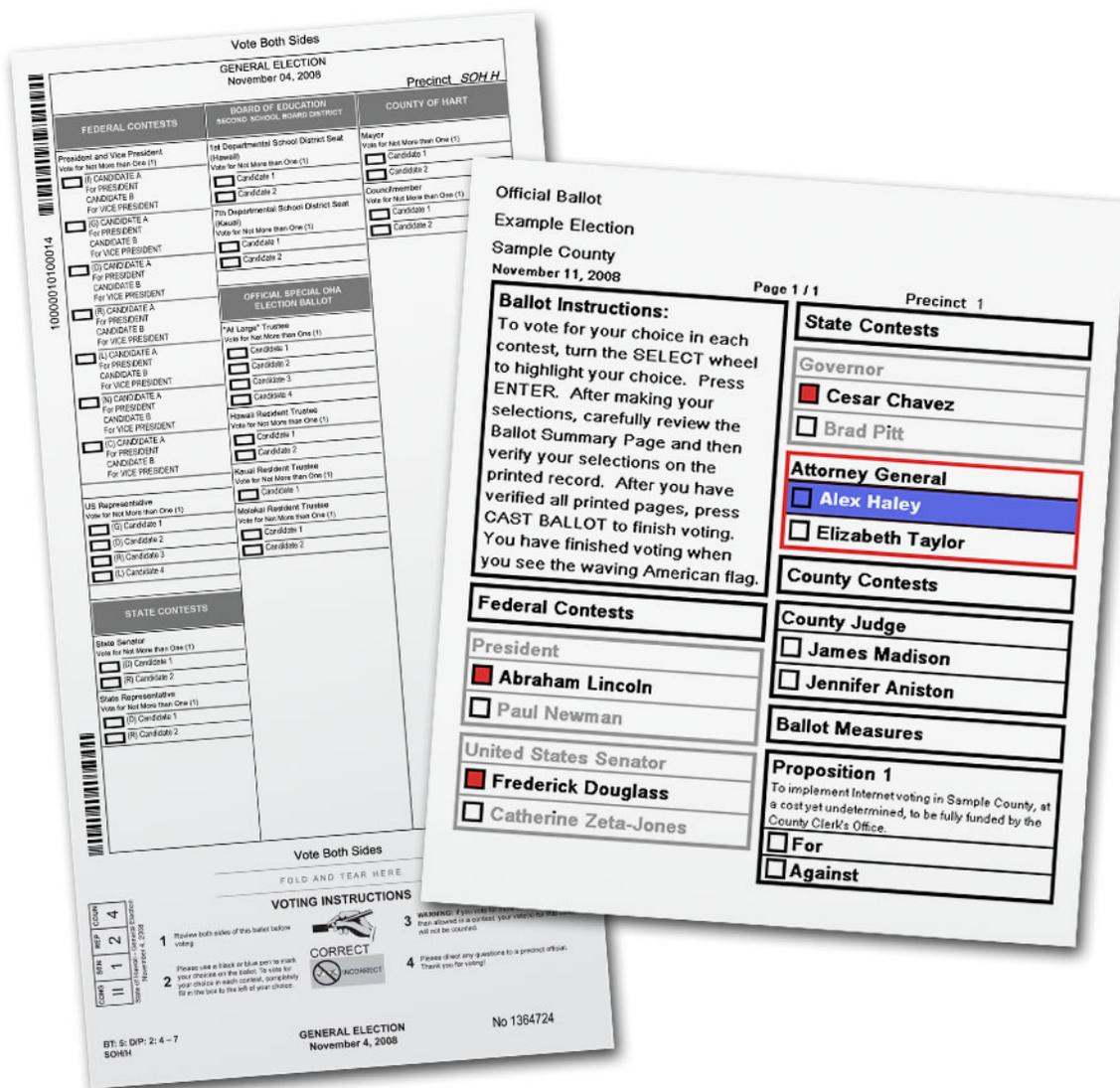
- Scanners
- Scanner interface cards
- Printers
- Card readers ▶

Retain all installation discs and documentation from third-party software (including those for peripheral devices) in a secure location, and clearly label them. Examples include:

- Printer drivers
- Scanner drivers
- Adobe Acrobat software
- CD-writing software
- Microsoft Office software
- WinZip software
- Dell System Restore software







## Overview

Creating an accurate, voter-friendly, and appealing ballot is one of the most challenging tasks you may face in any election. You must make sure the ballot is 100% correct and that the format and layout design present information efficiently and in an easy-to-read manner to the voter. Additionally, you must ensure that you have the proper tools on hand to deploy the ballot for the election and that you use those tools effectively.

This section contains best practices for working with BOSS, proofing your ballot, and managing MBBs, card readers, and vote centers.

## Ballot Design

Simple measures can be taken to improve the look of a ballot, both on paper ballots and on eSlate ballots. With careful consideration and proofing, each ballot style can look its absolute best.

Some specific methods to try include::

- Space can be better managed with ballot style-specific ballot text boxes.
- Images can be used in place of contest titles and ballot text.
- Customized font sizes, headers, and contest option orientation are available as part of Hart’s Ballot Design Service.



*Hart Ballot Production Services (BPS) and Ballot Design training are available for ballot layout, media creation, and printing services.*



*For more information about building “better ballots,” see Knowledge Base Article #8, “Ballot Design.”*

*For image size and resolution specifications, also see [Appendix F: “Ballot Graphic Specifications for BOSS, System 6X.”](#)*

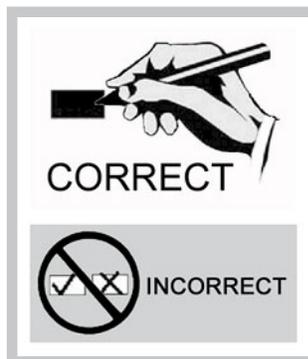
### Using Images in BOSS

Ballot graphics, or images, not only help meet key jurisdictional requirements, but can also play critical roles in ballot design and layout. Making ballots more accessible and easier to understand enhances voter usability and prevents potential voter errors.

Listed below are some well-practiced tips and tools for helping to create ballot images that display clearly and effectively.

#### Images enhance ballot usability

- Graphic-enhanced instructions for ballot marking may assist voters with visual or reading impairments. ▶
  - Simple, concise graphic instructions illustrating how to properly mark a ballot, in conjunction with written instruction text, is a far more effective instruction tool than instruction text alone. This reduces the amount of text instructions needed on a ballot and enhances voter education.



- Arrows, pointing fingers, or other directional indicators, when used in conjunction with corresponding audio instructions, can more clearly illustrate when to turn a page on the eSlate for some ballots.

- o Ballots where instruction notes or text appear at the bottom of an eSlate page (one column ballots with long instruction text, for example) should offer supplemental graphics and corresponding audio, instructing voters to move to the next page.
- Graphic images for special ballot instructions (For example, stop signs after Pick-A-Party races and party headers in Open Primary Elections) can enhance paper ballot usability.
  - o In jurisdictions running “open primaries,” or other elections containing dependent contests on paper ballots, additional visual instructions such as stop signs after the first race can provide additional instruction to voters on how to properly mark the remainder of their ballot.
- Using images as Ballot Headers helps to clearly separate races in different jurisdictions or parties (for example, “Instructions,” “Federal Contests,” and “City Contests” in the figure below).
  - o Shaded or otherwise distinguishable headers used for each jurisdiction or party on a given ballot provide clear organization and layout, making it easier for voters to understand.

OFFICIAL BALLOT CONSOLIDATED ELECTION CITY OF SAMPLE December 31, 2008			Precinct 007-0002A								
INSTRUCTIONS	FEDERAL CONTESTS	CITY CONTESTS									
 CORRECT	<b>US SENATOR</b> Vote for One <table border="1"> <tr> <td><input type="checkbox"/></td> <td>CANDIDATE 1 Congressman</td> </tr> <tr> <td><input type="checkbox"/></td> <td>CANDIDATE 2 Entrepreneur</td> </tr> </table>	<input type="checkbox"/>	CANDIDATE 1 Congressman	<input type="checkbox"/>	CANDIDATE 2 Entrepreneur	<b>CITY ATTORNEY</b> Vote for One <table border="1"> <tr> <td><input type="checkbox"/></td> <td>CANDIDATE 1 Deputy Mayor</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Write-in</td> </tr> </table>		<input type="checkbox"/>	CANDIDATE 1 Deputy Mayor	<input type="checkbox"/>	Write-in
	<input type="checkbox"/>	CANDIDATE 1 Congressman									
<input type="checkbox"/>	CANDIDATE 2 Entrepreneur										
<input type="checkbox"/>	CANDIDATE 1 Deputy Mayor										
<input type="checkbox"/>	Write-in										
 INCORRECT											

### Applications for creating and resizing images

Finding the right tool to use for creating ballot images depends largely on your level of comfort with using graphic design programs. While some users may have experience working with more advanced programs such as Adobe Photoshop® or CorelDraw®, others may be more comfortable using a simpler and more immediately available application, such as Microsoft

Paint. Following Hart's image specification guidelines will provide the best possible image, regardless of your preferred image creation application.

*For image specification guidelines, see [Appendix F: "Ballot Graphic Specifications for BOSS, System 6X."](#)*

- Microsoft® Paint (MS Paint) is pre-installed on all HVS computers and is easy to use for basic ballot image creation, and sizing.
  - To set the size of a document within MS Paint, open the "Image" menu and select "Attributes." Set the measurement units to pixels, and then set the desired height and width for the image.
  - If using MS Paint for creating text images (ballot headers, for example), first set the size of the image. Then, select the text tool (designated with an "A") from the left-hand toolbar, create a box roughly where you would like to have the text appear within the image, set your preferred font and font size on the "text toolbar," and begin typing. Use the "Select" tool to reposition the text, if needed.



- PIXresizer is a free, downloadable, and easy to use graphic resizing program that allows you to quickly resize one image file or a selection of image files and save them in a different folder, so your original image is not changed. PIXresizer is not used to create images.

#### **TO USE:**

- Open PIXresizer and select "Load Picture."
- Once loaded, adjust the size of the image using the "Custom size" function. Refer to the Ballot Graphics Specifications chart in Appendix F for the appropriate size.
- If "Maintain Aspect Ratio" is unchecked both horizontal and vertical values can be modified, but the image may appear out of proportion.
- Save the image file as a Windows Bitmap (BMP).

#### **Getting the sharpest possible images**

- Only use high contrast images
  - Images that are dense with detail will not appear as clear as those that are simple.
  - Use black, white, and only one or two different grey tones.

- Use large fonts and graphics.
  - Because the image resolution is preset in HVS applications—254 dpi (dots per inch) for paper ballots and 72 dpi for eSlate—highly detailed images, scanned images, or images containing small fonts can appear blurry. For example, images containing large amounts of small font text such as propositions will appear blurrier and more difficult to read than an image used as a ballot header or instruction graphic.
  - If images are required to properly display a proposition, such as Tax Levy Tables, use as large a font as possible while conforming to the state-recommended image size guidelines.
- Unless used for small amounts of text such as signatures, avoid using scanned or already low-resolution text or graphics.
  - When possible, text should always be typed directly into the image creating application. Scanned images such as signatures should be scanned at the highest possible resolution, and then resized smaller to fit.
- Images should always fill the entire pre-sized canvas specified in the Ballot Graphics Specifications chart. Otherwise, they will appear blurry and smaller than may be desired.
  - When using images for proposition text on a ballot that is 8.5 inches wide and uses three columns, for example, the width of the entered text should stretch across all 600 pixels, leaving as little margin as possible. Once the entire text for the proposition has been entered, adjust the length of the image to eliminate the bottom margin.

#### **Entering the Image in to BOSS**

- Using double pipes (||) in Ballot Text that contains images allows images to appear on the ballot without undesired text.
  - To add the image, add a Ballot Text line within the contest tab. Type “||” and a description of the image added. If the image is for eSlate and audio needs to be recorded, type the audio script into the ballot text after the pipes. While anything typed after the two pipes will not display on the paper ballot or the eSlate, the text will appear in the TRANS application.
- When entering multiple images for a single ballot text, contest, etc, always close the “Add Image” window and save changes after each image has been loaded.

- o Proof ballot images not only by reviewing ballot templates within BOSS, but also by accepting a generated ballot to write an MBB and view ballots on the eSlate and in Ballot Now.



*For instructions on adding images into BOSS, refer to the BOSS Training Manual.*



*Hart offers customized ballot design based on your needs through the Ballot Design Service, as well as training/consulting services to teach you similar techniques..*

### **Archiving images for use in future elections**

- Images are ballot data and should be treated as such. During ballot creation, save and back up all images being used as you would any other important ballot data.
  - o Images should be named clearly to avoid confusion when adding them to a BOSS database as well as for archival purposes. For example, an election specific image for a Spanish proposition appearing on a paper ballot could be named *"SP Prop 10 Paper.bmp."*
- Create blank or stock pre-sized image templates for use in future elections.
  - o Save blank images within an image template folder and name each file clearly and simply. For example, a blank image template for ballot headers on a two column eSlate ballot could be named *"Blank Header eSlate 2C.bmp."*
  - o Create and archive stock or "static" image templates for instruction graphics, party and jurisdiction headers, seals, and signatures. Any image that is used or could be used again in future elections should be archived to alleviate having to needlessly re-create work.

## **Mobile Ballot Boxes (MBBs)**

### **MBB Inventory**

- Take inventory of your MBBs well before each election.
- Calculate how many MBBs or Audio Cards will be needed for this election.
  - o Use the MBB Worksheet in the Election Related Management section of the Management and Tasks Training Manual and BOSS Training Manual to do the math.



*"MBB Worksheet\_41406.xls" is available on the Hart Customer CD.*



*Order additional MBBs from Hart, as necessary.*



*To calculate the lifespan of MBBs, see Knowledge Base Article #6, "MBB Lifespan."*

### **Writing MBBs**

- Use an MBB Tracking Log to track all MBBs and Audio Cards that have been written.
- Double-check that the proper mode is selected when writing MBBs ("Election" or "Test")
- For maximum writing speed with System 6.2.1 use a Hart Card Reader, which is forty times faster than legacy card readers.

### **Label MBBs**

- Be thorough. Track the MBB ID, polling place and/or precinct, and the Mode (Election, Test, or Audio Card).
- Use removable labels, such as Avery 6460 or compatible.
- Color-code MBBs. Using differently colored labels, fonts, or highlighters will help you to easily differentiate between Election Mode MBBs, Test Mode MBBs, Audio Cards, and other cards written for different BOSS databases within the same election event.



*MBB label templates are available on the Hart Customer CD provided during the initial implementation. Should you need an additional CD, contact the CSC.*

### **Work in Teams of Two**

Have one person write ballot media in BOSS, and another complete the spreadsheet and label the MBBs and Audio Cards. This will help you cross check the work and reduce the chance of mistakes.

## **Ballot Media Quantities**

Hart recommends that the jurisdiction have an on-hand inventory of at least 50% more MBBs than the number required for any given election. To guarantee the highest quality and compatibility with your Hart Voting System, only purchase MBBs directly from Hart.



As detailed in the *HVS Management and Tasks Training Manual*, minimum quantity requirements are:

Ballot Media to Write Per Election	
Test Mode MBBs	Election Mode MBBs
1 MBB for each JBC included in LAT	1 MBB for each JBC included in Early Voting in person
1 MBB for each eScan included in LAT	1 MBB for each JBC included in Election Day voting
1 MBB for each Ballot Now computer included in LAT	1 MBB for each eScan included in Absentee Voting (by-mail)
1 MBB for warehouse testing (optional)	1 MBB for each eScan included in Early Voting in person
1 MBB to enable SERVO to add test Event(s) for LAT backup	1 MBB for each eScan included in Election Day voting
1 MBB for each voting system in use at the Help Desk	3 MBBs (1 per election source—Absentee, Early Voting, Election Day) for each Ballot Now (Server) computer used for voting
Audio Cards	1 MBB per election source for incremental Cast Vote Record (CVR) processing (such as late mail) for each Ballot Now (Server) computer used for voting
1 Audio Card per DAU eSlate included in the election (Early Voting and Election Day)	1 MBB to enable SERVO to add election Event(s) for backup (This MBB can be reused as one of the JBC or eSlate recount MBBs)
1 Audio Card for warehouse testing (optional)	1 MBB per 65,000 CVRs for JBC CVR recount MBBs, using SERVO, for Early Voting in person
1 Audio Card for the DAU eSlate in use at the Help Desk	1 MBB per 65,000 CVRs for JBC CVR recount MBBs, using SERVO, for Election Day in person
10% of total as spare Audio Cards (Hart InterCivic recommends writing at least 10% above the number actually needed in the field as spare Audio Cards.)	1 MBB per 65,000 CVRs for eSlate CVR recount MBBs, using SERVO, for Early Voting in person
Other Ballot Media	1 MBB per 65,000 CVRs for eSlate CVR recount MBBs, using SERVO, for Election Day in person
Demonstration eSlate (Demo cards) with data similar to the live election for Voter Education and Outreach activities.	1 MBB per 65,000 CVRs for eScan CVR recount MBBs, using SERVO, for Absentee (by mail)
Training MBB and Audio Cards with data similar to the live election for poll worker training activities.	1 MBB per 65,000 CVRs for eScan CVR recount MBBs, using SERVO, for Early Voting in person
	1 MBB per 65,000 CVRs for eScan CVR recount MBBs, using SERVO, for Election Day in person
	10% of total as spare Election Mode MBBs (Hart InterCivic recommends writing at least 10% above the number actually needed for the JBC, eScan, and/or Ballot Now units included in Absentee, Early, or Election Day voting.)

\* HPS customers wishing for BPS to hold risk-mitigation cards for you must provide those cards to Hart along with the rest of your cards.

**MBB Lifespan**

Though the MBB is a reliable and reusable memory media, it should be considered a consumable product. The typical lifespan of an MBB is in the range of two to four.



*For details about MBB lifespan and recommended usage, see Knowledge Base Article #6, "MBB Lifespan."*

**MBB Capacity**

All Cast Vote Record (CVR) values are conservative estimates, and based on standard 128 megabyte MBBs.

- JBC: 10,000 CVRs (Access Code range of 0000–9999)
- Ballot Now: 65,000 CVRs
- eScan: 20,000 CVRs, 600 write-in images
- SERVO: 65,000 CVRs

**Election Kits**

Hart can supply your jurisdiction with a variety of election supplies, including Election Kits. These kits are sets of "tools" needed at the polling place or central count for common tasks that poll workers and election officials perform. Kits include forms, rubber stamps, stamp pads, security seals, etc.

Order kits no later than 3 weeks before Early Voting begins to allow for assembly, processing and shipping.



*"Custom Training Kits" containing MBBs to use specifically for training purposes are available for purchase through the Hart Catalog.*

**Consumables**

Order consumables at least 8 weeks before the date needed to allow for manufacturing lead time, processing and shipping. Common consumables include, but are not limited to:

- Batteries
- JBC and eScan paper rolls
- VBO paper rolls
- MBBs

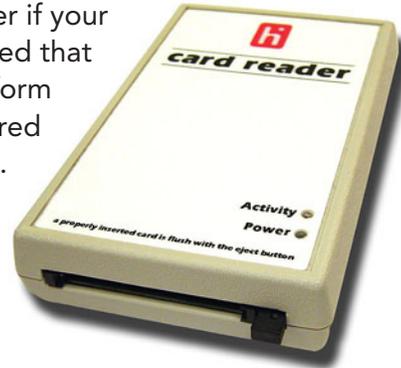


*For a full list of consumables, see the Hart Catalog available at <http://www.hartic.com/pages/221>.*

## Card Readers

For System 6.2.1 only, use the Hart Card Reader if your state has approved its use. Testing has confirmed that all cards and all Hart-approved computers perform better with the Hart Card Reader when compared to the legacy card readers currently in the field. The Hart Card Reader:

- Significantly reduces MBB read/write time, as older readers use the USB 1.0 standard and new readers use the faster USB 2.0 standard.
- Reduces or eliminates USB port disconnects.



To purchase Hart Card Readers, call the CSC at (866) ASK-HART, or contact your salesperson.

## Computer and Equipment Best Practices

Keep computers running at optimal performance by following these guidelines:

- Use a properly grounded anti-static mat beneath each computer.
- Make sure the system is plugged into a surge protector.
- Make sure the system is in a secure, stable position to avoid vibration.
- Make sure the system has proper ventilation to prevent overheating.
- In general, it is best not to abort a process that is midstream but to let the process complete, and then take corrective action.
  - For example, if a Tally report export is in progress and you decide not to export because a new update is impending, simply allow the export to finish, delete the export file, update the information needed in Tally, and export again.
- Performing hard shut down of equipment, disconnecting cables to avoid a data transfer, or other process-interruptive steps can lead to equipment failures. This is a common best practice when working with any technology, not just the Hart Voting System equipment.
- For mission-critical computer systems, such as the Tally computer, use an uninterruptable power supply (UPS) to prevent the loss of data in the event of a power outage during Election Night reporting.
- Always exit Windows by choosing "Shutdown" from the Start menu.

**When returning equipment for repair:**

- To ensure prompt repair and delivery, follow the procedures described in *Knowledge Base Article #10, "Return Merchandise Authorization Process."*

**BOSS Best Practices**

Pay close attention during the ballot definition process. Make careful selections in BOSS to control aspects of an election such as equipment performance and passwords. Avoid errors by following a thorough proofing process.

**General**

- Re-enter data instead of overwriting.
  - When correcting mistakes, it is better to delete data entries entirely and re-enter them, rather than overwriting fields.
- When entering contest names, consider how they will appear on eSlates, VBOs, and paper ballots.
  - Look for spacing issues on Ballot Summary Pages and Paper Verification Pages, then adjust the Summary/Verification Font Size setting in BOSS to make best use of space.
- Proof the BOSS database all the way through to Tally to verify how Election Night results will look. To perform a simple "round trip" of the HVS process:
  - Write a few Test-Mode MBBs from BOSS.
  - Print and scan a few ballots in Ballot Now.
  - Vote on an eSlate or scan ballots through an eScan.
  - Create a Test-Mode Tally database, and then read and tabulate the Test-Mode MBBs.
  - Print desired Tally reports.
- Change Open Polls and Close Polls passwords every election.

**Compatible fonts**

Both BOSS and TRANS will accept text without any special character formatting. If data must be copied and pasted into BOSS or TRANS from Notepad, ensure that you:

- Use only ASCII non-Unicode fonts to copy and paste into BOSS
- Use only Unicode fonts when pasting into TRANS.

**Using special characters:**

Different applications use different formats for displaying special characters. To avoid most incompatibility issues:



- Use the chart located in “Appendix E: Accent Marks for Spanish Language Text” of the *BOSS Training Manual* for proper character formatting.
- Do not copy from Microsoft Word and paste into BOSS or TRANS. It is best to copy from Windows Notepad instead.



For further information about properly copying and pasting, see Training Bulletin “Copy and Paste into BOSS and TRANS” (October 2006).

**BOSS Tips****Straight Party Translations**

If straight party names are not being translated properly:

1. In BOSS, go to Jurisdiction > Select Languages > Define Reusability
2. Deselect “Reuse English Candidate names,” and click Save
3. Export text to TRANS
4. Translate strings as necessary
5. Import updated files into BOSS
6. Repeat for audio information.



For more information, see Training Bulletin “Setting up a Bilingual Straight Party Contest in BOSS” (September 2006).



Hart offers full ballot production services through the BPS team.

**Avoiding Precinct Split Errors in System 6.2 or 6.2.1**

- Add split precincts sequentially and immediately following the original precinct in BOSS.
  - If you must add a split to an already-existing list, delete the original precinct, add it at the end of the precinct list, and then add the split immediately below.
- Ensure that each precinct split also has a Split Name.
  - For example, naming precincts “101 A” and “101 B” is correct; naming precincts “101” and “101 B” is not correct.

## Vote Center Administration

### What are Election Day Vote Centers?

Vote Centers are Election Day Polling Places where any voter in a given jurisdiction may cast a ballot, regardless of which precinct the voter lives in. Vote Centers can be beneficial in that:

- Fewer polling places are used or required.
- Voters can vote at their convenience throughout the day.
- Fewer poll workers, troubleshooters, and pieces of equipment are needed, thus making Vote Centers more cost-effective.
- Jurisdictions can provide better support by focusing resources on fewer polling locations.

### Creating Vote Centers in BOSS

- Create a single Election Day Polling Place in BOSS for all precincts and name it "Vote Center." Regardless of the number of physical polling locations planned, this single Polling Place ID (PPID) can be assigned to all Election Day Polling Locations, and Early Voting Polling Locations, if applicable.
- Label each MBB with the physical polling place name, the mode (Early Voting or Election Day), the MBB ID.
- Document each MBB ID and polling location name on the Voting Device and MBB Tracking Log, found in the "Management and Tasks Training Manual" as well as on the Hart Customer CD.
- The ability for poll workers to print a Tally Tape on the JBC or eScan can be set in BOSS. Clearing "Allow Print" will disallow printing a Tally Tape on the device.



### Preparing Equipment for Vote Centers

- Predefine each Vote Center JBC and eScan with the same Election Day Polling Place ID.
- Use the Voting Device and MBB Tracking Log to record the device serial number, the MBB ID, and the associated polling place for each piece of equipment.
- Label each eScan, JBC, eSlate, and their boxes with the name of the assigned polling location.
- Due to the physical length and amount of time it will take to print a Zero Tape, one should be printed at the warehouse and left on the device before deploying the equipment to the polling place.

- Be sure to check amount of remaining paper on the roll before deploying the equipment, as it may be near the end. Supply additional paper rolls as necessary.
- Train poll workers to verify that the Public Count on the device shows “0” when opening the polls, rather than having to print a second Zero Report.

### **Important Information for Poll Workers**

As is the case with Early Voting, each Vote Center JBC or eScan is assigned to a polling place using a Polling Place ID (PPID) that contains *all* precincts within the jurisdiction.

- Poll workers operating the JBC must double-check the precinct number on the Access Code before it is issued to a voter to make certain that each voter receives the correct ballot style.
- Have poll workers issuing paper ballots for the eScan double check the precinct number on the ballot before issuing it to a voter to ensure that each voter receives the proper ballot style.
- Vote Center JBCs and eScans produce Zero Reports and Tally Reports that contain all contests for each precinct, making them longer than single-precinct polling places.

### **Tabulating Results**

Because each Vote Center JBC and/or eScan uses the same PPID, use MBB IDs to track which polling places have or have not reported.



- Use the Voting Device and MBB Tracking Log and the Chain-of-Custody document to check equipment off as it is returned to the Counting Station.
- To confirm that all MBBs have been read, cross-reference the MBB Status Report from Tally with the Voting Device and MBB Tracking Log spreadsheet and the Media Production List report from BOSS.
- In Tally, be aware that all precincts will show as 100% reporting once the first Election Day MBB with votes for all precincts is read, since each Vote Center MBB is able to record votes for all precincts.
  - Accurate and real-time precincts reporting percentages cannot be determined when using Election Day Vote Centers.

## Proofing the Ballot

### Proof thoroughly within BOSS and TRANS first

- Print and use the following BOSS reports to proof ballot content and associations:
  - Contest List
  - Early Voting and Election Day Polling Place Detail Lists
  - Early Voting and Election Day Polling Place Summary List
- Proof ballot content and associations for:
  - Spelling and Content
  - Contest Details
    - Contest options
    - Write-in lines
    - Party information
    - Candidate details
    - Contest instructions
  - District, Precinct, and Polling Place associations
- Use BOSS Preview to proof ballot layout for all ballot styles and languages.
- If ballot layout customizations are needed to generate or properly display a ballot or ballot style, contact the CSC at least 2 weeks before the date needed.



*The Ballot Design Service and training is available if ballot layout customizations are desired to improve ballot usability or create better aesthetic layout.*

- Review all audio within TRANS 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.

### Proofing Using the DRE

- Listen to all audio on the DRE.
  - Confirm that all audio strings are clear, audible, and associated with the appropriate text.

- Proof the Ballot Summary Screen for all ballot styles.
  - Verify that all contests and candidate names appear without avoidable truncation or needlessly small font size.

### **Proofing Using Paper Ballots**

- 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.
  - Assess fold patterns on different ballot styles.
    - For more detailed guidelines, see [“Fold Lines through Option Boxes” in Chapter 6, “Paper Ballots: Ballot Now Operations.”](#)*
  - Try reading the ballot upside-down or from bottom to top to encourage careful examination.
- Make changes and edits in the root BOSS database, copy forward, generate, and proof again.

Ballot Production Service Customers should test MBBs and Audio Cards as soon as they are received. Notify BPS as soon as possible with edits and changes.

## **Ballot Folding Impacts**

### **Proofing Fold Lines While Creating Your Ballot**

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

- Avoid folding ballots through option boxes and barcodes as dirt may accumulate in the fold.
- Where possible, evenly distribute contests across columns.
- Add additional space between contests by using empty ballot texts and pipes, not by using carriage returns.
- 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 folds that go through a column of option boxes.
- Avoid excessive folding and creasing.

### **Before mailing**

- Educate persons folding ballots on proper ballot folding procedure.

- Fold ballots evenly, uniformly, and avoiding short folds along the top of the sheet.
  - Short folds at the top of a sheet can cause a ballot to fold over within a batch and thus be improperly scanned.
- Folds through a barcode may affect a scanner's ability to read ballots

## Using TRANS

- The TRANS application was designed and tested with 1/8-inch (3.5 mm) stereo plugs only.
  - Larger 1/4-inch stereo plug will also work with a 1/8-inch adapter.
  - Do not use USB microphones as they are not supported by TRANS.

### Volume and Truncation

When using TRANS 2.0 and 2.1, follow these steps to optimize volume and minimize truncation of the ends of audio strings:

1. Before recording, make certain that the "Auto 'Proof'" checkbox is cleared.
2. Record all audio and listen to each string after each recording.
3. Once all audio has been recorded, select the "Auto 'Proof'" check box.
4. Starting at the top of the Audio panel (panel to the upper left, where the strings are listed), use the mouse to click each individual string. Continue to the bottom of the list.
5. As you select the string, the .wav file will be enhanced (the volume will be increased), without truncating audio.



*For more about the use of "Auto 'Proof,'" see Training Bulletin "Truncation of Audio in TRANS" (June 2006).*

### TRANS File Management

Use an organized structure for keeping track of your files when working with text translation strings and audio files in TRANS.

#### CREATE SEPARATE FOLDERS

Before beginning the export process from BOSS, create the following two folders in **c:\boss\export**:

- Text Out
- Audio Out

Also, create the following two folders in **c:\boss\import**:

- Text In
- Audio In

If desired, create shortcuts to these locations on the desktop to access them easily.

### **The TRANS Process**

There are four basic steps for completing translation and audio recording for a BOSS database:

1. Export text strings for translation in TRANS.
2. Import translated text back into BOSS.
3. Export audio files from BOSS for recording in TRANS.
4. Import recorded audio files into BOSS.

When the database is ready for text translation, export the translation strings from BOSS to **c:\boss\export\Text Out**. Note that the default file path location in the BOSS export window is **c:\boss\export**; browse one level deeper to the Text Out folder.

From **My Computer**, navigate to the Text Out folder, cut the file from **c:\boss\exports\Text Out** and paste it into the Jobs folder on the desktop.

After completing text translation for that language, cut the translation file out of the Jobs folder and paste it into **c:\boss\imports\Text In**. Then, import the translated text into the BOSS database following normal procedures.

Follow the same steps for cutting and pasting audio files into the Audio Out and Audio In folders.

*The Election Data Management Consultation Service is available from Hart to help you find the best way to manage your data.*



## Overview

Your ballots must be printed properly in order for your scanning processes to run smoothly down the line, so you must establish and follow procedures that produce high-quality paper ballots. This section contains best practices for printing your paper ballots, including printer maintenance; ballot paper specifications, storage and preparation; using print server and print queue functionality to automate your ballot printing process; printing ballot stubs; using contract print vendors; and establishing good quality control procedures before sending your ballots out into the field.

## Introduction to Printing

There are two basic options when printing paper ballots: ballots can either be printed on-demand and in-house using an HP 9000-series laser printer (or similar Hart-provided printer), or ballots can be printed by a third-party, or “contract,” print vendor who typically uses a commercial digital document printer. In order to guarantee the highest quality of printed ballots, best practices apply to both of these printing methods. If printing is not done correctly, scanners may not read ballots properly.

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.

It is also crucial to note that before initiating a full-scale ballot printing production, whether printing ballots in-house or with a contract print vendor, a small sample of test ballot files must first be made and tested on voting equipment.

## Printer Maintenance

Dust and debris are the main causes of poor-quality printing. Although these can never fully be eliminated, much can be done to reduce their effects.

- Ensure that printing and storage rooms are kept clean and dust-free.
- Perform all manufacturer-recommended printer cleaning and maintenance on schedule, even during the election off-season.
- Prior to each election event, conduct full preventative maintenance on ballot printing equipment, including checking for proper paper and toner supplies.



*Hart offers preventative maintenance programs for Kodak® and Fujitsu® scanners that provide onsite visits from the scanner vendor with preferred response times. Contact the Customer Support Center (CSC) for additional details.*

- Use only original equipment manufacturer (OEM) toner cartridges.
  - Remanufactured toner cartridges may have premature failures, leading to printer downtime. They may also produce low quality images.

### During the Printing Process

- If printing on-demand, make certain that the printer has been serviced and maintained.
- If printing with a contract print vendor, make certain that the vendor is Hart-certified or -qualified.



For more information about this process, see [“Contract Print Vendor Certification,”](#) later in this chapter.

- Always use high-quality paper, like Hart Official Ballot Paper.
  - Mechanically, paper dust can be caused at the paper mill by old, loose knife holders, poor set-ups and dull knife blades. Physically, paper dust problems can increase with large variations in moisture, poor formation (especially in 100% recycled-content grade), excessive variability of roll hardness (probably caused by poor winding at the mill) and other large variations in process parameters (caliper, weight, etc.).
- Use the same weight paper for all ballots in the election.
  - Consult your scanner model’s manual for paper weight calibration information.
  - For consistent results, always use Hart Official Ballot Paper.
- Do not double-print ballots for custom stub printing (paper that runs through the printer twice may contain fuser oil or lubricant, making it more susceptible to slippage).
- When printing ballots on demand, only use the HP 9000-series printer or Hart-approved equivalent.

### **Reducing Paper Dust**

Paper dust accumulates in the fuser area and creates image-quality issues by contaminating components, and causing a variety of difficult-to-diagnose problems.

- Perforated paper should be as free as possible of paper dust and chaff, which can cause machine contamination.
- Fan paper thoroughly on all four sides to remove any dust or shavings from edges.
- Using paper specifically designed for laser printing will ensure high-quality images and proper printer maintenance.

For the list of acceptable paper characteristics, see [“Hart Official Ballot Paper”](#) later in this chapter.

For best results, always use Hart Official Ballot Paper.

### **Cleaning Rollers Contaminated With Paper Dust**

Rollers can usually be cleaned with a damp lint-free cloth and an isopropyl alcohol solution. Always follow the instructions in the printer’s operator guide for cleaning and replacing the feed rollers.

- If the fuser rollers can not be cleaned or replaced by the operator, call for service.
- Keep printers in a dust-free environment, closed off from outside and manufacturing areas. Ensure doors and windows remain closed.

**Paper Storage**

Paper is very sensitive to moisture changes, and this fluctuation can cause print quality issues. The temperature of the room where paper is stored can have a significant effect on how that paper performs in the machine. Humidity control is essential to ensure proper paper handling and performance.

- Optimum paper storage and printer operating temperature is 68 to 76 degrees.
- Optimum storage conditions include areas with a relative humidity of 35% to 55%. Overloading of the storage or work area with external air from open doors and excessive in-and-out traffic can defeat environmental control systems.
- Do not store paper directly on the floor, since that increases the possibility of moisture absorption. Store paper on pallets, shelves, or in cabinets in an area protected from extremes of temperature and humidity.
- Only open sealed reams of paper when they are ready to be loaded into the printer.

**Conditioning Paper**

When paper is moved from a storage area to a location with a different temperature and humidity, allow the paper to acclimate to the new location before use.

The following chart will assist you in determining the amount of time need to condition unopened cartons of paper.

Paper Conditioning Chart						
Paper Quantity (Number of Cartons)	Cut Sheets, Ream wrapped in Cartons Difference in Temperature (From Storage to Production Area)					
	10° F	15° F	20° F	25° F	30° F	40° F
	Number of Hours to Condition					
1	4	8	11	14	17	24
5	6	11	15	18	22	31
10	8	15	20	24	29	41
20	11	18	24	29	35	49
40	13	21	28	34	41	58

**Example:** If one carton is moved from a storage area with a temperature of 50 degrees to an operating area where the temperature is 70 degrees, the carton should remain unopened in the printing room for a minimum of 11 hours prior to use.



### Hart Official Ballot Paper

Hart Official Ballot Paper is a number one grade bond, laser guaranteed, 28# basis weight meeting the following minimum specifications:

- Basis Weight: 28# Bond
- Finish: Smooth Xerography
- Grain: Short
- Sheffield: 100–120
- Brightness: 91–94
- Content: Virgin wood fiber, no recycled content
- Fluorescent Level: 4%
- Moisture Content: 4.5%
- Packaging: Moisture resistant ream wrap
- Trim: +/- .025"
- Squareness: +/- .0075"
- Toner Adhesion: Mill treatment which allows optimum binding of toner and paper fibers
- Standard Sizes (inches):
  - 8.5 x 11
  - 8.5 x 14
  - 8.5 x 17
  - 8.5 x 18
  - 11 x 17



Custom cuts are available for stubs, if needed.



*For a complete list of paper weights and specifications, see Knowledge Base Article #9, "Hart Official Ballot Paper."*

Only Hart Official Ballot Paper meets the above basic specifications and includes a *trademarked watermark*. This original dandy roll watermark—“Official Ballot”—random-repeating and readable in any orientation, assists in detecting fraud. This trademarked paper is only available from Hart InterCivic.



*To purchase Hart Official Ballot Paper, contact your salesperson.*

#### **When it comes time to begin planning for ballot printing:**

- Order Hart Official Ballot Paper at least 4 weeks in advance before use.
- Commercial print vendors who are printing ballots for Hart customers should use either Hart Official Ballot Paper or paper that meets or exceeds the above specifications to produce minimal dust and maximum toner adhesion.
- Use only white paper.
- Use the same weight of paper for all ballots in an election.

#### **Contract Print Vendor Certification**



Contract, or “third party,” print vendors other than Hart should participate in Hart’s quality-assurance certification program. Obtaining this certification means the print vendor conforms to Hart’s printing guidelines and has proven to produce high-quality paper ballots.

Hart designates three classifications for print vendors:

1. **Certified Print Vendors:** The print vendor has completed the HVS printing test and agreed to use Hart’s exclusive Official Ballot Paper for all ballot production. Hart’s Official Ballot Paper is a high-quality paper that ensures excellent toner adhesion. It is also watermarked with a patented image to ensure security. Hart is a Certified Print Vendor and has a ballot printing facility with experienced staff.
2. **Qualified Print Vendors:** The print vendor has completed the HVS printing test with paper that meets the specifications of Hart’s Official Ballot Paper, without the watermark, and retains the option to either use Hart’s Official Ballot Paper or paper that meets these specifications going forward.
3. **Not Recognized Print Vendors:** The print vendor has elected to forgo the HVS printing test and is therefore not recognized as a Hart Voting System Ballot Printer. Hart does not recommend using these print vendors.

If you know of a print vendor that would like to begin this process, supply Hart with their name and contact information. Once the classification process is complete, Hart will send out notification of the certification status of the print vendor.



*For more information about Official Ballot Paper, see Knowledge Base Article #9, "Hart Official Ballot Paper."*

## Printing Ballots On-Demand

- For consistent results, HP 9000-series printers should be used for ballot printing only.
- Before printing ballots:
  - Clean equipment. Follow Hewlett-Packard's user-maintenance documentation for proper cleaning methods.
  - Confirm that default printer settings in Windows are configured for use in Ballot Now.

*For information about setting default printer settings, see [Appendix C, "Ballot Printer Configuration."](#)*

- When printing from Ballot Now, wait for the progress bars in the print window to completely finish before selecting new groups of precincts to print.

## Printing Ballots to File

### Printer Settings

- Ensure the HP 9000 is set as your Windows default printer.
- Verify that the printer's graphics option is set to "download as soft fonts."

*For the full list of default printer settings, see [Appendix C, "Ballot Printer Configuration."](#)*

### Print-file Size

Producing print-files that are larger than 4,000 ballots can overtax Windows' capabilities. This can both render the print-file unusable, and also cause Ballot Now to become non-responsive, requiring a reboot of the computer.

To keep files sizes manageable:

- Determine in advance how many ballots are needed for each precinct and/or split. Create a spreadsheet containing each precinct and/or split and the corresponding number of ballots.

- If the number of ballots needed for a single precinct and/or split is more than 4,000, split the quantity between two line items. For example, if precinct 77-A requires 5,000 ballots, create two line items on the spreadsheet for 77-A, each with 2,500 ballots.
- Use the spreadsheet to determine your print file names. Remember, multiple ballot files for the same precinct and with the same number of ballots must be uniquely named to prevent accidentally overwriting files. For example, ballot files for Precinct 77-A can be named "77-A\_2500\_1.ps" and "77-A\_2500\_2.ps."

### PostScript Files

- Limit PostScript file sizes to 2 gigabytes. For general reference, assume:
  - 20–30 kilobytes (KB) per 8.5" x 11" ballot image (one side).
  - 30–40 KB per 8.5" x 14" ballot image (one side).
  - 35–45 KB per 8.5" x 17" ballot image (one side).
  - 50–60 KB per 11" x 17" ballot image (one side).
- Print no more than 4,000 ballots per PostScript file.
- Do not change settings in Adobe Acrobat Distiller. These have been pre-configured for optimal printer compatibility.

### Ballot Quality Control

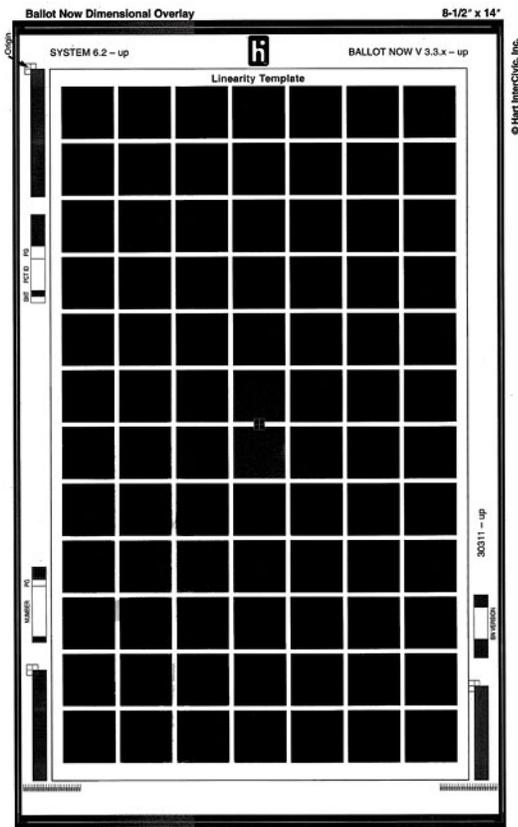
Even in the best environment, with well-maintained equipment, highly trained operators and the finest materials, defects can still occur. Inspection of the printed ballot is fundamental to this process. When a defect is found, it must be fixed.

A test or sample ballot should be printed and inspected before the first production run is printed.

- After printing some sample or test ballots, use a dimensional overlay, or "Ballot QC Overlay," for quality control. The overlay will catch printing issues early.
    - If using a third-party vendor to print ballots, ensure that the vendor is using an overlay to test ballot printing quality.
- To learn more about using the Ballot QC overlay, see Knowledge Base Article #7, "Ballot Quality Assurance."*
- If printing ballots from a PDF file, ensure that "Page Scaling" is set to "None."
  - Scan test ballots through your scanner to verify successful printing and scanner operation



- Pull ballots from the middle and the end of the stack.
- Make sure bar codes are printed clearly.
- Replace print cartridges if necessary.



#### Recommended inspection steps are:

Inspect the first ballot of each precinct, or every 500 ballots, whichever is less.

- Verify all serial numbers are printed in Arial font, and not in Courier.
- Compare Test Mode ballots or Sample ballots to Election Mode ballots, both front and back sides, and verify no components are missing.
- If folding the ballots, make certain that folds will not go through, or come within 5/8-inch of the barcodes or through option boxes.
- ◀ Use the Ballot QC Overlay to check the alignment, position, and size of all barcodes and the page frame that surrounds the ballot content. Check both the front and back of the ballot.
- Inspect the ballot for obvious voids, smears, or toner that is too light or dark.
- Look for ghost images and double images
  - Ghost images and double images may be caused by unintentional toner transfer due to an inadequate power source, failing toner cartridge, or failing fuser module.
- Check for toner spray or spots in or near names, option boxes or bar codes.
- Look for paper defects, wrinkles, tears or creases.

#### Defective Ballots

- If a defect is observed, check for a recurring problem by inspecting the same area on the immediately preceding and following ballots.
- If a defect is confirmed, the ballots must be reprinted. Follow a secure chain-of-custody procedure to ensure that reprinted ballots are exchanged for the defective ballots, and defective ballots are voided.
- Reprinted ballots should be printed in a different serial number range.

- All defective and reprinted ballots must be accounted for. Retain or destroy defective ballots so that no possibility exists for their reintroduction to the printed ballot supply for the election.

### Using a Print Queue and Ballot Now Print Server

If you have a large quantity of ballots to print, or if you have mixed quantities to print for each precinct, use a print queue file to simplify this process and significantly improve printing time.

Using the print queue requires experience working with spreadsheet applications, such as Microsoft Excel, as well as an understanding of comma-separated file formats (**.csv**).

*For instructions on how to create a properly formatted print queue file, see [Appendix D, "Creating a Print Queue File."](#)*

#### Print Queue Recommendations

Before using Ballot Now to print ballots or ballot files, verify that the default Windows printer is the HP LaserJet 9000 PS.

#### To produce a separate ballot file for each precinct:

- Separate, single-line **.bnp** (Ballot Now Print queue) files are needed.
- Create a master spreadsheet with all precincts and the appropriate quantities. Once the master comma-separated text file is created and saved, each individual line can be copied from the master, pasted into a new Notepad text document and saved as the desired single file (e.g., **EV\_101\_10.bnp**, indicating that 10 Early Voting ballots for precinct 101 are contained in the file).
- Precinct names must appear exactly as they do in BOSS, including spaces and hyphens (for example, "101 A" is not the same as "101-A").
- Verify no space or return at the end of the line is accidentally copied into the new document.

Ballot Now Print Server processes all **.bnp** files copied into the BNP folder one at a time.

When configured to produce ballot files, Ballot Now produces one PostScript (**.ps**) file from each **.bnp** file. If the file contains 50 lines representing 50 precincts, one **.ps** file will be produced containing all ballots for all the precincts in that one file.

- When producing mail ballots on demand or ballot files for individual daily mailings, export data from the desired date range from the mail ballot posting application and create the **.bnp** text file from this information. Even if this export data produces one record for each posted voter (i.e., ballot quantity is one), the precinct name can be repeated as often

as needed and in any order (e.g. order in which the ballot application was posted) thereby producing a supply of ballots in the same order as envelopes or mailing labels also printed from the posting application.

Hart recommends sending the WinZip–compressed PostScript file(s), not PDF files, to the print vendor. Creating a PDF file from the PostScript file can be used locally for spot checking ballot files produced.

**If a specific starting serial number for ballots generated in the print queue is desired:**

1. Set the starting serial number in Ballot Now to *one number less* than the desired starting serial number.
2. Manually print one Sample ballot from any precinct and verify the serial number.
3. From this point, ballots printed from the print queue file will start with the desired serial number.

**Print Queue Errors**

If after placing the print queue file into the Print Queue folder the ballots fail to print or no PostScript file is created, there is an error somewhere in the process. most likely a problem with the **.bnp** print queue file itself.

Ballot Now produces a **.bno** (Ballot Now Output) file after each processing run. Open this file with Notepad and review—if it shows all zeros, nothing was processed and an error exists in the input file.

- Review *[InputFileName].txt* for any errors, such as
  - o A missing comma,
  - o A missing single quotation mark on text field or inappropriate single quotation mark on numeric field,
  - o A space at the end of any line, or carriage return after the last line (which indicates a new, empty line).

Correct the error(s), save the file, and then save a copy of the file in the Production/BNP folder with a **.bnp** extension. Try to run the file through the print queue again.

If the print queue input file appears to be formatted properly, there may be print jobs trying to print that need to be purged.

- From the Print Server Control panel in the Ballot Now Print Server window, click the Purge Print Queue button to remove ballots before starting over.

### Using a Ballot Quantity and Serial Number Log Spreadsheet

Create a master spreadsheet to guide the Ballot Now operator when creating ballot files manually. This file can also be sent with the ballot PostScript files to the print vendor as a guide for verifying which files are being shipped on the CD or external hard drive. It includes assigned serial number ranges for each type of ballot printed and can include polling places and other data. Some vendors use this information to generate labels for the ballot package.

#### Create a master spreadsheet with the following columns:

- Type (ED, EV, ML, Test, Sample, etc.)
- Precinct-Split name
- Quantity to print
- Starting Serial Number
- Ending Serial Number (formula = Starting Serial Number + Quantity)
- Ballot File Name (use this formula in the first row to create the planned ballot file name: =**CONCATENATE(A1,"\_",B1,"\_",C1,".ps")**, and increment each cell number for subsequent rows.
  - o **Note:** after joining cell data with the concatenate formula, copy > paste special > values back into the cells of that column.

When the print vendor requests no more than 4,000 ballots per PostScript file, this spreadsheet can assist with determining which precincts can be combined into one **.ps** file.

For jurisdictions printing daily batches of mail ballots on demand, this spreadsheet serves as another record of serial numbers used. A separate worksheet can be used for each day's printing/mailing.

- Should a printer's malfunction cause a serial number to be spoiled, this spreadsheet, along with the Ballot Now audit log, can serve as the official record of the spoilage.

### Custom Ballot Stubs

Ballot Now has the built-in capability to add a 3-inch stub to the bottom of ballots at the moment they are printed (whether printed to paper or to file). Not every jurisdiction has the same requirements for stub size, placement, or information presented. In these cases, it is necessary to create a custom stub.

Custom ballot stubs take special care to produce, and usually cannot be printed in-house using the HP 9000-series printer. There are two methods to create ballots with custom ballot stubs:

- Print ballots on ballot paper with pre-printed custom stubs. The custom stubs must have been printed using a commercial offset printer, not a laser printer.
  - Do not run ballots through the HP 9000-series printer twice in order to print a custom stub.
    - Paper that is run through the printer twice may contain fuser oil or lubricant. Oiled sheets are more susceptible to slippage, and may not be immediately receptive to further applications of printing.
  - Official Ballot Paper is available from Hart with perforated and pre-numbered stubs that have been printed using a commercial offset printer.
  - If Hart is creating the custom stubs, Hart can also print the ballots simultaneously.



*Hart provides printing and custom stub services without double-printing ballots.*

- Print ballots to file, and then use a post-production process to attach custom stubs to the ballots in the file.
  - Ballots with the custom stub can then be printed from that file using the HP 9000-series printer or through a contract print vendor.



*Custom stub creation is also part of the Ballot Design Service offered through Professional Services.*

In both cases, once a sample of ballots has been printed, always verify that the stub perforation is above the printed indicator line.

## Printing Foreign-Language Ballots with Images

When building an election database in BOSS, images can be utilized to enhance a ballot's overall appearance or to add clarification to a specific contest or ballot text. These images are added to each language as necessary.

When printing foreign-language ballots that use images that are different in each language (such as language-specific instruction text or special contest headers) Ballot Now must be restarted after one language is printed and printing ballots from another language is desired.

- Only print or preview ballots from the first language to print.
- Always exit Ballot Now by choosing "Exit" from the File menu.

Ballot Now does not need to be restarted if foreign-language ballots contain no images, or if they contain the same images in each language.





## Overview

Whether you use Ballot Now as your primary voting system or simply to count your vote-by-mail ballots, you want your scanning and resolution operations to be as accurate and efficient as possible. Included in this section are best practices for using Ballot Now to scan paper ballots. These include: scanner setup, cleaning and maintenance; preparing ballots for scanning; handling multi-sheet ballots and multiple scan stations; and write-in management.

## Increasing Voter Education and Awareness

As voters experience more elections, they will become more familiar with their ballot and will make fewer mistakes. However, steps can be taken early in the election cycle to help minimize the learning curve associated with newer voters.

### Initiate measures to increase voter awareness of the necessity to mark the ballot properly, as instructed

- Many paper ballot processing difficulties can be alleviated by continuing or enhancing voter education and awareness efforts.
  - Use mailers and inserts instructing voters on proper ballot marking procedures
  - Use document “6300-702 30A\_Mail Insert BN ENG.pdf” located on *Hart Customer CD*.
  - Update your website to include informative and current information on proper voting in your jurisdiction, including sample ballots for the coming election
  - Keep your ballot instructions simple and consistent. Use the same instructions for flyers, websites, and the ballot from election to election.



## Scanner Set-Up

### Recommended Minimum System Requirements

The actual performance of any particular Ballot Now workstation depends on the computer's configuration. If a scanner is not performing optimally, a faster computer and/or more RAM may be necessary to obtain optimal scanner throughput.

In order to properly use your scanner, each Ballot Now computer needs at a minimum:

- Intel Pentium IV (or compatible) 2.0 GHz processor or higher
- PCI slot
- Microsoft Windows 2000 Professional only
- 1 GB of RAM
- 80 GB of Hard Drive Disk space.



*Always have Hart configure or upgrade your computer with known-compatible components.*

### White Background Kit

The white-background kit is a scanner accessory that changes the areas outside of the paper seen by the scanner from black to white.

- When scanning 8.5" x 17" paper, a white-background kit must be used for Kodak i600- and i800-series scanners.

### Kodak-Series Scanner Settings

Systems configured by Hart Technical Services have the proper firmware and drivers installed to properly use your scanner.

- Never reinstall scanner drivers to resolve scanner issues. Always consult Hart for troubleshooting scanner issues.

Also part of initial configuration includes a Kodak-installed utility called the Scan Validation Tool (SVT). The SVT is not needed to operate the Hart Voting System. Please be aware of the following:

- Do not use Kodak scanner settings to attempt to override Ballot Now native settings.
- Do not allow scanner technicians to revise scanner firmware or change any settings in the Kodak Scan Validation Tool installed on the computer, or Ballot Now operations may fail.

## Adjusting Scanners for Paper Weight

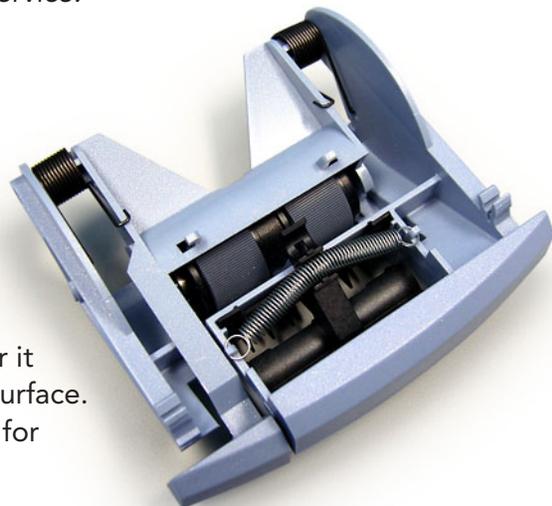
Most ballots feed properly with the default settings. However, there may be times when you are scanning ballots that are lighter or heavier than normal, and it may be necessary to adjust the tension of separator modules or pick rollers. However, if Hart Official Ballot Paper is always used, then these settings may only have to be set once.



*Separator module and pick roller tension adjustment is included with Hart's Scanner Preventative Maintenance service.*

### Kodak i260-Specific ►

The separator module on the i260 controls the scanner's sensitivity to heavy paper. Two positions for the separator module spring allow you to adjust the tension to improve the scanning of heavier paper: the spring can be placed in one of the two channels, or it can be released and left on the flat surface. Consult the Kodak i260 user manual for detailed steps.



**Fujitsu-Specific**

When scanning with a Fujitsu scanner, two main factors contribute to successful scanning: pick roller tension and paper thickness.

- Adjust the pick roller tension if the scanner is pulling in more than one sheet at a time.
- Adjust the paper thickness setting to tell the scanner what weight of paper is loaded in the hopper.

Pick roller speed and paper thickness settings can be set via the onboard Operator Panel.

SCSI interface scanners like Fujitsu scanners should always be powered on before powering on computer



*Hart recommends that the same weight of paper be used for every election. For best results, always use Hart Official Ballot Paper.*

**Scanner Cleaning and Maintenance**

Scanners are sensitive, optically-based devices. Ballot paper is fibrous material that goes out into the world, collects debris, gets handled, gets dirty, and then finds its way back to the scanner. Ballot scanners are unique in that they are not run in the same environment as most office scanners, and the threshold for error is far lower than in a non-election environment. Because of these factors, it is imperative to keep scanners clean and regularly maintained in order to provide Ballot Now with the best possible ballot image.



*Hart recommends that genuine preventative maintenance service be performed at least once a year for all Hart scanners. Receive discounted rates only from Hart (as a preferred Kodak® reseller).*

**Items Affecting Scanner Operations****Printing**

Proper scanner maintenance begins in the printing process. High-quality printed ballots reduce debris and will help keep scanners in top condition longer.

- If printing on-demand, make certain that the printer has been cleaned and maintained.
- If printing with a commercial print vendor, make certain that the vendor is Hart certified or qualified through Hart's Printer Certification Program.
- Always use high-quality paper of a consistent weight, like Hart Official Ballot Paper.

- Use same weight paper for all ballots in the election
  - Consult you model scanner’s manual for paper weight calibration information.
  - For consistent results; Hart Official Ballot Paper is recommended.
- Do not double-print ballots for custom stub printing.
- When printing ballots on demand, only use the HP 9000-series printer or Hart-approved equivalent.



Hart offers Ballot Now Operations training for both new and experienced Ballot Now operators.

### Broken Paper Fibers

Broken paper fibers are usually the result of using ballot paper that does not meet published specifications. These specifications require paper with attributes that are common in the print industry and are available in various brands of commercial paper. Ensure that your ballot print vendor uses only paper that meets the prescribed specifications, such as Hart Official Ballot Paper.

- To minimize the amount of broken paper fibers, always fold ballots with the grain. ►
  - Folding ballots against the grain (usually vertically), will create sharp creases and break paper fibers, creating pockets for dirt to settle.

The image shows a sample ballot for a general election on November 04, 2008, in the County of Hart. The ballot is divided into sections for Federal, State, and Local contests. It includes a barcode on the left and right sides, and a 'VOTING INSTRUCTIONS' section at the bottom. The ballot is marked with red dashed lines indicating fold lines.

**FEDERAL CONTESTS**

President and Vice President  
Mark for Not More Than One (1)

For PRESIDENT  
Candidate 1  
Candidate 2  
For VICE PRESIDENT  
Candidate 1  
Candidate 2

**STATE CONTESTS**

Board of Education  
Mark for Not More Than One (1)

For PRESIDENT  
Candidate 1  
Candidate 2  
For VICE PRESIDENT  
Candidate 1  
Candidate 2

**LOCAL CONTESTS**

For PRESIDENT  
Candidate 1  
Candidate 2  
For VICE PRESIDENT  
Candidate 1  
Candidate 2

**VOTING INSTRUCTIONS**

1. Please fill in all bubbles on this ballot before voting.

2. Please fill in all bubbles on this ballot. Do not fill in any bubbles on this ballot unless you are sure you want to vote for that candidate.

3. If you see the words "CORRECT" and "INCORRECT" on this ballot, please do not vote for that candidate.

4. Please do not vote for any candidate in a precinct official if you are not voting.

### Fold Lines

#### Fold lines through option boxes

When possible, avoid folding ballots through option boxes. While a fold through an option box is by itself safe, additional procedural and environmental variables can create easily avoidable problems.

#### Foreign matter in fold lines

Incidents can occur when fold creases in vote-by-mail ballots fall directly through ballot option boxes and are of such prominence in the scanned image that Ballot Now may interpret these as a mark by the voter.

The accumulation of foreign matter in the fold crease or broken paper fibers along the fold line can contribute most significantly to the creation of

abnormal fold lines. The presence of foreign matter is most often caused by a failure to use approved digital printing procedures and processes. Examples of errors committed in this area include:

- Printing ballots on unapproved ballot stock,
- Not properly acclimatizing ballot stock before printing,
- Running ballot stock through a digital printer more than once,
- Using improper toner spray and/or fuser heat settings,
- Not allowing sufficient “curing” of printed ballots before distribution.



Use only print vendors that have demonstrated their ability to meet Hart printing standards and have been certified or qualified by Hart to do so. In almost every case, print errors such as those described above have been committed by an uncertified print vendor hired by the Hart Voting System (HVS) customer.

*For more information about print vendor certification, see “[Contract Print Vendor Certification](#)” in Chapter 5, “Paper Ballots: Printing.”*

### **Ballot Handling When Opening Mail**

- Open return mail with care.
  - Avoid using pens to open envelopes. Using a pen to open a ballot envelope can cause unintentional marks on the outside fold of a ballot.
  - Avoid cutting through a ballot fold when opening ballot envelopes.
  - Wash and dry hands before unfolding ballots and handle ballots minimally. Dirt and oil can settle on both inner and outer folds, trapping residue and exaggerating an otherwise clean fold line.
- Watch for questionable ballots when removing ballots from envelopes. Questionable ballots should be separated for remake and/or manual resolution. For example:
  - Ballots with fold lines through option boxes that are dirty and/or damaged.
  - Ballots with other, non-fold related issues such as tears, damage, or markings in a barcode.
- Completely unfold and flatten all ballots to prevent ballots from sticking to the preceding or following ballot.
  - Underside bulges around perforation areas should be flattened as much as possible to avoid feeding problems and stacker jams from papers that do not lie flat.

- Jog and straighten ballots to catch:
  - Additional ballot folds
  - Stubs that have not been removed,
  - Remnants of stubs
  - Short ballots caused by improper stub removal.
- Flatten back-folded ballots as much as possible to reduce shadows and instances where ballots are stuck together.
- Fan ballots on all four sides to release particulates and debris such as paper dust, paper clips, and staples.
- Remove all Post-it-style sticky notes from all ballots.

#### **Ballot Handling Before Scanning**

- Observe proper scanner maintenance.
  - Proper scanner maintenance is required on a periodic basis to ensure that the digital images created during the ballot scanning process provide accurate and consistent information for processing and interpretation by Ballot Now.
- Wash and dry hands.
- Watch for questionable ballots.
  - Separate ballots with fold lines that are dirty, damaged, or go through option boxes for remake or manual resolution.
- Separate ballots that are damaged, dirty, or have other obvious resolution issues for remake and/or manual resolution.
- Completely unfold and flatten all ballots to prevent ballots from sticking to the preceding or following ballot.
- Flatten back-folded ballots as much as possible to reduce shadows and instances where ballots are stuck together.
- Flatten, jog, and straighten ballots to catch any additional ballot folds.
- Riffle large batches to prevent ballots from sticking together.
- Count the number of ballots in each batch before scanning (and verify the count with the Scan Batch Report after scanning).

#### **Pre-Election Scanner Cleaning**

Clean and maintain scanners. Replace rollers regularly.

- Purchase a scanner care kit for your particular scanner model. These care kits typically include cleaning pads and replacement rollers.

- Have scanner regularly serviced through a preventative maintenance program at least once a year or before each election. The program includes thorough cleaning, change in worn consumables, and calibration.
- Replace scanner rollers and Automatic Document Feeder (ADF) pads at the manufacturer's recommended intervals.
  - Refer to manufacturer's documentation to maintain scanner rollers, glass and ADF pads.
- Ensure the scanner's maintenance plan is up to date.
- Have a trained technician service your scanner.
- Only use the scanner for ballots, not for other functions during non-election times.



*Hart offers a full-service onsite Scanner Preventative Maintenance program, available through Professional Services.*

#### **Pre-scanning Ballot Processes**

- To reduce debris on the ballot:
  - Fold ballots with the grain. Folding ballots against the grain (usually vertically), creates sharp creases and breaks paper fibers, creating pockets for dirt to settle.
  - Clean hands frequently, or wear disposable gloves. Oily hands in the ballot processing line may attract and transfer debris to ballots.
  - Handle ballot envelopes the same way every time. Practice this routine and make certain that the routine does not damage ballots or add debris.
- If ballots are still stubbed when processing:
  - Tear stubs off along the perforation and remove any excess stub remnants if tear is incomplete.
  - Remove stubs in an area away from the scanner.
  - Clean stub debris by brushing the stub-end of the batch and fanning ballots before they are scanned.
- Use a paper jogger to straighten, aerate and fan ballots by batch (making ballots easier for the scanner to pick up and also shaking debris from the ballots).
  - Clean the paper jogger occasionally.

### Scanner Cleaning Frequency

Clean the scanner in accordance with the suggestions in the scanner manual (usually every 5,000 to 7,000 ballots). More frequent cleaning may be needed throughout an election event as different environmental variables affect a scanner's performance. These variables include:

- Larger quantities of ballots.
- Excessive handling of ballots, particularly by oily or dirty hands.
- Larger ballot sizes such as tabloid, excess toner used in printing, and ballots spanning multiple sheets.
- Paper particles resulting from stub removal.
- Excess dirt that can stick to ballots in a high-humidity environment.
- Low humidity, highly static environments, where static electricity can cause the scanner to attract dust and other particulates.
  - Use an anti-static mat at the ballot sorting stations and the Ballot Now scanning stations.
- Dusty or dirty scanning rooms and areas that can contribute to accumulated scanner dirt through contact with ballots, hands, and dust.



*Have Hart regularly perform your Scanner Preventative Maintenance to keep scanners in top working condition.*

### Scanner components that require particular attention:

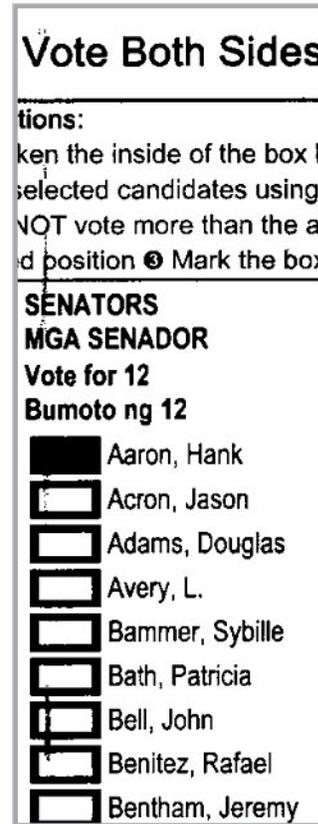
- Main pick-up roller
  - Excessive dust on the main pick-up roller will make it appear worn and smooth to the touch, causing the roller to skim across the page instead of grabbing properly.
- Feed rollers
  - Excessive dust on feed rollers along the inside of the scanner path will result in a squeaking sound as the scanner feeds.
- Automatic document feeder
  - A worn automatic document feeder (ADF) pad will not push the paper fully against the main pick-up roller, causing multiple pages to be fed at one time.
- Image guides
  - Excessive dirt or marks on the image guides may create lines across the scanned ballot image.

### How to detect that the scanner requires cleaning:

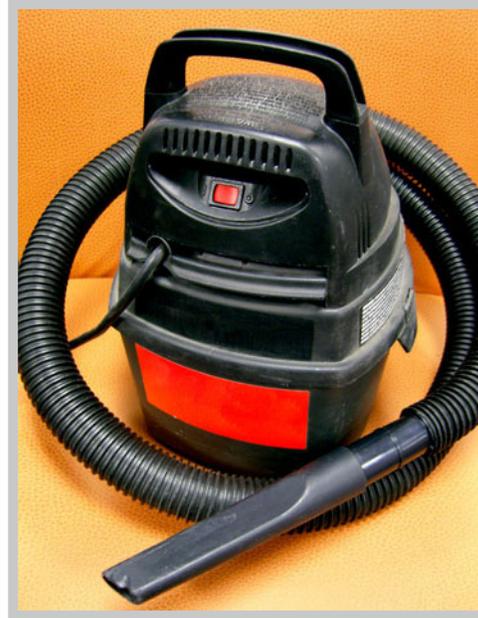
- Ballots jam during scanning.
- The pick-up roller grabs multiple sheets at one time or does not grab sheets at all.
- A squeaking noise is audible as the scanner feeds the paper through.
- Lines or other evidence of particulate matter appear on the scanned image in the ballot preview window.
- Watch the scanned ballot preview in Ballot Now while scanning.
  - Stop and clean the scanner if ballot images look “dirty” or appear to have lines or streaks. ▶

### How to practice proper scanner maintenance and cleaning:

- When a ballot has been partially fed into the scanner or is trapped, never attempt to remove the ballot by pulling it back through the hopper. This places unneeded strain on and damage to the rollers.
  - Always open the scanner door before removing jammed ballots.
- Refer to the manufacturers’ documentation for instructions on maintaining scanner rollers, glass and ADF pads.
- Purchase a scanner care kit for your particular scanner model. These care kits typically include cleaning pads and replacement rollers.
- Purchase a dust cover fitted for your scanner to keep out dust and debris during storage.
- Schedule training and maintenance visits from the manufacturer or through Hart’s Scanner Preventative Maintenance service plan.



- Clean scanners with a vacuum, not by blowing into the scanner with compressed air (blowing can force debris further into the scanner). ▶
- Clean glass with antistatic pads.
- Clean dirty rollers with diluted alcohol wipes.



## Ballot Preparation for Scanning (Ballot Review Board Best Practices)

### Inspect Ballots

- Identify marks that may be interpreted incorrectly by the scanner.
  - Marks made using tools other than the blue or black ball-point ink pens, such as highlighters, pencils, gel pens, and white out, may not be interpreted properly by Ballot Now, or could leave residue behind and cause damage to the scanner.
  - Stray marks in option boxes, such as crossed-out contests on limited ballots or mismarks and/or pen rests within an option box can be misinterpreted by Ballot Now.
  - Ballots with tears, damage, or marks either inside of or within 1/8-inch of a barcode can be misread read by Ballot Now, cause Ballot Now Image Processor (BNIP) errors, or may not be read at all.
    - Hart Ballot QC Overlays used in printing can help determine whether a mark or tear is within an acceptable scanning tolerance for Ballot Now.
  - Ballots that are dirty or have exaggerated fold lines caused by dirt, damage, or debris going through option boxes can be misinterpreted by Ballot Now.
- Additional issues to watch for:
  - Stubs still attached
  - Short or torn ballots
  - Paper clips and staples
  - Dirty or damaged fold lines through option boxes
  - Ballots with tears, damage, or markings in a barcode.



- Sort all ballots into separate batches prior to scanning, such as “Manual Resolve Ballots,” “Remake Ballots,” and “Autoresolve Ballots” batches.
- When remaking ballots, always perform a hand audit to identify mismarks and duplicate the voter’s intent on a new ballot in accordance with state and local procedures.

### **Multi-Sheet Ballot Management Without Serial Numbers**

Always print paper ballots with serial numbers, unless specifically required by law otherwise. This will help minimize the number of “Orphan” or “Incomplete” ballots when scanning multi-sheet ballots, and will also prevent scanning the same ballot twice.

- An “Orphan” Ballot is a ballot returned without the first sheet of a multi-sheet ballot.
- An “Incomplete” Ballot is a ballot returned with only the first sheet.

When scanning multi-sheet ballots that do not have serial numbers, it is crucial that all sheets of one ballot have the same Sequence ID in order for Ballot Now to recognize them properly and not rejected as Orphans during scanning.

- The Sequence ID is the first digit in the lower left barcode of every ballot. As ballots are printed from Ballot Now, the Sequence ID increments from 0 to 9, then repeats. For example, the first ballot printed from Ballot Now for any given election will have a sequence ID of 0, the tenth ballot will have a sequence ID of 9, and the eleventh will return to 0.
- Isolate any true Orphan or Incomplete ballots returned during pre-sort. Then, remake all sheets of the ballot onto a new ballot, leaving the replacement for the missing sheet blank.

### **Processing Limited Ballots in Ballot Now**

- Create a Limited Ballot-only precinct or precincts in BOSS showing only eligible contests, for example, federal contests.
- Print Limited Ballots only as Sample Ballots from Ballot Now. For processing, remake Limited Ballots onto official ballots before scanning.
  - Using “Official Ballots” as Limited Ballots and marking out contests that are not to be voted on adds risk for unintentional marks in option boxes such as those used to cross out the race.
- If Official Ballots must be used for the limited ballot, instruct persons eliminating ineligible races to avoid marking through option boxes, no matter the marking device. These ballots need to be separated and carefully inspected before scanning.

- o Ballot Now might read red ink if used for crossing out races on Limited Ballots.
- o Barcodes on Limited Ballots may also be crossed out to prevent scanning.

## Scanning Ballots and Batch Management

### Managing Multiple Ballot Now Workstations

- Make each Ballot Now workstation distinct.
  - o Establish simple names for Ballot Now workstation, for example, "Station 1," or "Station 2").
  - o Create desktop wallpaper on each computer that clearly displays the scan station's name.
  - o Assign each station a color. Use that color in the desktop wallpaper and use corresponding paper color for all reports associated with that scan station (Scan Batch Reports, Election Reports, etc.).
- Name and color code each external Ballot Now Image Processor (BNIP) computer, if applicable, to be consistent with the associated Ballot Now computer.
  - o If "Ballot Now 1" is green, each BNIP station connected to it should have green wallpaper and be named "BNIP 1-1," or "1-2," for example.
- Establish a consistent naming convention for each scanned batch and enter batch names into the Scan Batch Notes field before scanning.
  - o Ballot Now users with more than one workstation should use a Scanned Batch ID convention that includes the workstation ID (example: 4-1, 4-2, 4-3 for scanned batches on Ballot Now 4). Print each scanned batch report on colored paper that corresponds to the Ballot Now workstation.
- If several scanners are available but only one Ballot Now workstation is being utilized, mark each batch of ballots with the name or serial number of the scanner through which they were scanned. In the event that previously resolved ballots need to be referenced back to a particular scanner, marking each batch of ballots with the scanner serial number allows for those additional and sometimes unforeseen audits to be performed.

### Feeding Ballots into the Scanner

- Orient all ballots within a batch in the same direction.

- Count the number of ballots in each batch before scanning (and verify the count with the Scan Batch Report after scanning).
- Scan all ballots header-first to avoid Windows memory limitation issues and optimize BNIP processing time.
  - If scanning ballots in Landscape mode:
    - For Kodak i600-series only, orient the ballots face up (instruction side up) with the header (top of the page) to the left.
- BNIP error messages can occur when ballots are scanned slightly skewed or rotated, or have damaged barcodes, preventing the BNIP processing queue from processing some ballots within a batch. When a batch of ballots fails to completely process, or when a BNIP errors occur:
  1. Delete the scanned batch, exit Ballot Now, and reboot the computer.
  2. Check the batch for ballots that are not oriented consistently with the rest of the batch.
  3. Examine the ballots for damage to the barcodes.
  4. Check your scanner for dirt or debris; clean if needed.
  5. Rescan the batch.
- Watch the ballot images closely as they pass through the scanner. Verify that:
  - Ballot images are scanning in straight. Ballots that are overly skewed may not save as "Accepted."
  - Scanned ballot images are not degraded. Consistently degraded ballot images indicate that the scanner is dirty. Cancel the scan and vacuum and/or clean the scanner.

**Using the Ballot Now Image Processor:**

The Ballot Now Image Processor (BNIP) is the module of Ballot Now that looks at each ballot and determines which option boxes have been marked. The BNIP opens automatically each time Ballot Now is opened, and runs in the background without any user interaction necessary. A BNIP may run on the Ballot Now a server computer or on multiple physically separate BNIP client computers to distribute the processing workload.

Running BNIPs simultaneously on both server and client is not recommended.

**To maximize use of the BNIP:**

- Verify the BNIP window is open and connected to any Ballot Now servers (if running on a client) before scanning any ballots.
  - Open Ballot Now on additional client computers, then log in and select the election. Simply turning the computer on will not enable BNIP capabilities.
- Monitor progress in the BNIP window for error messages and arrange all Ballot Now windows so that other error messages can be seen.
  - If BNIP errors occur, the associated messages may appear behind the BNIP window and not be immediately noticed. By default, the Ballot Now and the BNIP windows will appear centered on the desktop, thus obscuring any BNIP-related error messages that may appear during scanning.
  - Once you have saved the batch and the BNIP processing has started, minimize Ballot Now and move the BNIP window away from the center of the screen.
- Keep batch sizes manageable (50–200 ballots per batch, or 500 if using a Kodak i830 scanner).
  - In the unlikely event an “Error saving TIFF file” message appears, either:
    - Multiple batches have been run without allowing enough time for the BNIP to process, or
    - A single scanned batch was too large, thus overloading the BNIP.

To resolve, close and re-open the BNIP window to process excess TIFF files. Verify that Ballot Now displays “Images to Process = 0,” and then delete any files remaining in the **c:\BNImages** folder.
- Verify that Ballot Now counts down to zero after saving each batch
  - If the BNIP appears to have finished processing ballots, but Ballot Now still has images to process, that usually means that either:
    - BNIP was accidentally disconnected by the user.
    - BNIP has encountered an error caused by a poor scan.

To resolve, close Ballot Now. Ballot Now always checks for locked ballots still needing to be processed when it starts up. If any are found, Ballot Now releases the lock on them.
- Ensure the BNIP has completed processing before navigating to the Resolve window.

## Ballot Resolution

While ballots do not need to be resolved immediately after scanning, resolving ballots periodically throughout the scanning process is highly recommended.

- Resolve ballots as soon as possible, rather than waiting until after all ballots have been scanned.
  - Periodic resolution allows you to catch any unforeseen scanning issues early in the process.
- Before beginning resolution, always check the “Resolve Status Report” or the Scan Batch Management window to make sure all ballots have been processed by the BNIP.
- Train several staff members on Ballot Now resolution. Remember that you can also use multiple BNIP Client machines for resolving ballots.
- Use keyboard hotkeys to expedite the resolution processes:
  - Ctrl + W = Opens the write-in resolution window.
  - Ctrl + S = Save changes.
  - Ctrl + N = Next contest.
  - Ctrl + A = Autoresolve ballot.
  - Ctrl + F4 = Close (to close the Resolve Ballot window).

## Use Resolution Filters

First, filter for and resolve blank ballots and ballots with damaged contests before resolving all other unprocessed ballots.

- Ballots with damaged contests are identified when Ballot Now cannot see the option box (such as when white-out is used to change a choice) and may need to be remade, or “duplicated,” or may just be the result of a poorly scanned batch and not necessarily due to voter intent.
  - A large number of damaged contests may be the result of a skewed scan, dirt or debris on the scanner glass.
  - If a damaged contest is found to have been scanner related, delete the batch, clean the scanner, and rescan.
- Blank ballots may indicate that a ballot was intentionally left blank, voted with an improper marking device, or may be improperly voted, such as if a voter circles option boxes.
  - Compare each blank ballot in a batch with the image to verify the ballot is truly blank. Follow local voter intent laws and procedures to resolve improperly voted ballots.

**Write-In Management**

- Place all ballots containing write-ins into the “manual resolve” batch. This will allow you to auto resolve other ballots that do not contain write-in choices.
- Enter Certified Write-In Candidates into Ballot Now prior to beginning resolution processes.
- Use the same functionality to enter frequently entered write-in names identified during ballot sorting so they appear in the drop down box on the Write-In Resolution screen in Ballot Now. This also helps ensure that all the write-ins are spelled the same way in Tally.

**Manual Resolution**

- Manually resolve all overvotes and damaged contests
  - A damaged contest or option box may be the result of a voter attempting to erase or cover an unintentional mark with correction fluid, tape.
  - Overvoted contests may be the result of dirt or residue on the scanner or degraded fold lines, stray marks, or pen rests within an option box.

**Autoresolution**

- Do not click on the ballot filter tree during auto resolving.
  - Always allow the auto resolution process to finish before attempting to view a specific ballot.
    - Clicking on the Ballot Filter Tree while auto resolving ballots can cause “Ballot Not Found” or “Node Not Found” errors.
    - If “Ballot Not Found” or “Node Not Found” errors occur while auto resolving a ballot or batch, use the Undo Tool from the Resolve Ballot Window to undo all actions performed on that ballot or batch.

**Printing Reports and Ballots for Duplication**

Throughout the ballot scanning process, two very different types of documents will need to be printed regularly from Ballot Now: ballots for voter intent duplication (remakes), and reports. Each requires its own paper type, print settings (such as those used for duplex printing), and at times, size. Because these processes are performed on the same application, they can create workflow bottlenecks.

- If possible, use different printers for each task. Reserve your HP 9000-series printer for official ballot printing only, and use a separate USB

printer for reports (for example, the HP 2400-series printer attached to Tally). Doing so will eliminate additional time spent and risk associated with continually changing printer settings on either printer used while processing ballots.

**Managing MBBs**

- Plan ahead for incremental reporting.
- Complete all scanning designated for a given MBB before reading the MBB into Tally.
- Be sure to close each MBB used in Ballot Now before taking it to Tally.
- Use a new MBB for each new reporting cycle.
- Use only one MBB at a time.
  - Ballot Now automatically disallows previously-used but open MBBs once a new MBB is inserted. Do not use a new MBB until finished with the previous one.

## Overview

Using the eScan as your primary voting system allows voters to cast paper ballots while preserving the accuracy and quick reporting provided by the Hart Voting System (HVS). Unlike the eSlate, the eScan contains sensitive, calibrated digital scanning equipment and must be maintained properly. This section contains best practices on eScan use, transportation and maintenance that will help you keep your equipment in optimal working condition.



## Counting Ballots with eScan

### Write-in Management

Each eScan MBB can hold roughly 600 write-in images. If you expect more than 600 write-ins cast at a polling place for an election, plan to use a spare eScan at that location.



*To purchase additional eScans and MBBs, contact your salesperson.*

### Multi-Sheet Ballots

Scanning multi-sheet ballots on the eScan is not supported in System 6.1.

In System 6.2.1, the eScan creates a cast vote record and saves it in the cast vote record log when any single sheet of a ballot is scanned.

- When preparing ballots for scanning on the eScan, keep the ballot sheets together. However, scan ballots one at a time.
- After scanning the first sheet, the voter must wait for the flag to disappear and the "Ready to Scan" screen to appear before attempting to scan the next sheet.
- The Public and Private counters will only be updated when Sheet One of a ballot is scanned. They are not updated when Sheet Two of the ballot is scanned.
- When remaking multi-sheet ballots for scanning on the eScan, remake both sheets of the ballot.
- If using multiple eScans in one polling place, both sheets of the ballot must be scanned on the same eScan; otherwise, the total count of ballots per eScan may be incorrect.



*For more information about scanning two-sheet ballots, see: Training Bulletin "System 6.2 eScan Two Sheet Ballot Rules," (September, 2006).*

## eScan Warehousing



### eScan Power Supply

- Use only power supplies labeled “For eScan Only” (if you also have VBOs).
- Storing the eScan power supply (or “brick”) inside the Emergency Ballot Box:
  - Simplifies transporting the eScan to and from the polling place.
  - Lessens the chance for damage to the brick caused by handling errors. Because the fuse inside the power brick is fragile, sudden jarring can cause the fuse to break (such as when dropped on the floor).
  - Ensures the emergency ballot box drawer is correctly installed and the eScan is properly secured to the tub when the poll worker opens the ballot box door to retrieve the power supply.

## Transportation and Storage

The eScan is a calibrated piece of equipment and needs to be protected when transporting or storing. Moving parts and optics within the eScan are sensitive to excessive dust, moisture, and vibration.

- Only transport the eScan while mounted on the ballot tub when moving the unit within the same facility.
- Always use a Hart-approved shipping container, such as the original cardboard eScan box, when transporting the eScan between facilities (for example, to or from a polling place).



*Heavy-duty shipping containers are available for purchase from the Hart catalog.*

- If the eScan must be transported while mounted on the ballot tub:
  - Secure the eScan to the ballot tub using the mounting screws on the ballot tub.
  - Secure the eScan with its cover locked.
  - Secure the tub horizontally and vertically with tie-down straps. Severe up or down motion can affect the calibration and operation of the eScan.
- Do not store the eScan in high humidity or dusty environments; this causes moisture to collect on the glass surfaces of the eScan and may reduce the quality of scanned ballot images.



*For more information about proper transportation procedures, see Service Bulletin #53, "Recommendations for eScan Storage and Transportation."*

## At the Polling Place

When setting up eScans at the polling place:

- Deploy the eScan's stabilizer feet.
- Ensure sufficient electricity is available.
- Do not use 3- to 2-prong adapters.
- Use an uninterruptible power supply (UPS)
  - A model that produces 800 volt-amps will sustain a 2 hour backup. ▶
- Only use power supplies labeled "For eScan Only" (if you also have VBOs).



## Maintenance

Because the eScan may have been stored for long periods of time between uses, and the eScan has moving parts and optics that are sensitive to excessive dust, moisture and vibration, perform these steps at least once per year, or prior to every election.

- Always clean the upper and lower glass plates on each eScan with lint-free isopropyl alcohol wipes.
- Do not pour or spray liquids on the glass plates as this can cause streaking on the bottom surface of the glass plates.
- Have Hart replace the internal CMOS battery every 3 to 4 years through the preventative maintenance program.
- Use the eScanReady utility before every election.



eScanReady is a utility that interfaces directly with the eScan and allows several types of calibration to be performed.

This utility is:

- A non-invasive software tool that only requires a laptop and a crossover cable to operate.
- Takes less than 4 minutes per eScan to quickly validate that the unit is operating optimally (includes eScan boot time).
- Secure and safe—no eScan software is affected or can be accessed by eScanReady.



*For inquiries regarding eScanReady onsite preventative maintenance and calibration service, contact the CSC or your sales person.*





## Overview

There are many pieces that must come together to make an election a success. You must establish good warehouse procedures to make sure that your voting equipment is reset, ready to deploy and all in good order, and you should have a plan for dealing with your equipment when it's returned after voting has finished. This section covers best practices for general warehousing and SERVO use, handling Daylight Savings Time on your voting equipment, and managing your voting equipment effectively.

## SERVO Best Practices

- When adding events in SERVO, use the proper mode MBB for the data to be backed up. Use only Election Mode MBBs for election mode data, and Test Mode MBBs for test mode data.
- Name events in detail, with election date, mode (Test or Election), and source (AB-EV-ED). For example, "November 2008 - Election Mode – EV" is more useful than just "November 2008." Otherwise, it may be difficult to tell the difference between several similar events.
- Open SERVO and confirm under **Backup and Reset** that both the "Reset" and "Download logs" check boxes are cleared before proceeding.
- Backup all equipment from all election events, including Logic and Accuracy Tests.

## SERVO Updates and Tips

- Hart recommends the use of electrostatic discharge stations with a single point ground when resetting, backing up, or inserting Mobile Ballot Boxes (MBBs) into Hart Voting System (HVS) equipment.



*For more information about reducing static, see Knowledge Base Article #5, "Electrostatic Discharge Stations for Processing HVS Equipment."*

- If the Quatech cable's connection appears unresponsive:
  1. Close the Backup and reset window to close the port.
  2. Cycle power on the JBC or eScan.
  3. Re-open Backup and reset window and try backing up or resetting again.
- If SERVO appears unresponsive, cycle power and discharge any static electricity:
  1. Shut down the SERVO computer.
  2. Disconnect the power cable from the back of the computer.
  3. Disconnect the power cable from the outlet or power strip.
  4. Disconnect the Quatech cable.
  5. Eject and reinsert the Quatech card.
  6. Reboot Windows.

## Backup and Reset Best Practices

- Select the "Download logs" check box to turn off the backup function before disconnecting any cables.

- Remove Audio Cards from DAUs, and MBBs from JBCs and eScans before backing up.
- Make all physical connections before powering on devices (i.e. network cables for eScan, parallel and serial cables for JBCs/eSlates).
- After powering on a device, do not attempt to back up or reset until it reaches a stable point (such as when the screen displays "Insert MBB," or shows the button response test screen), usually about twelve to fifteen seconds.
- When backing up and resetting, wait at least 5 seconds after "Waiting for next device" appears in the lower-left corner of the **Backup and Reset** window before clearing the "Backup" or "Reset" check box, and then disconnect the cable from the device.
- Do not reset equipment until required in preparation for the next election cycle.
- When resetting devices, always confirm that JBCs, eSlates, and eScans display "Device Reset" or "Device Serviced."
- Disconnect and remove all batteries to prevent battery leakage when preparing equipment for long-term storage after an election.

### Daylight Savings Time

Beginning in 2007, by federal law, Daylight Saving Time (DST) was extended one month to begin at 2:00 a.m. on the second Sunday of March and end at 2:00 a.m. on the first Sunday of November. The current Hart Voting System firmware does not support the 2007 DST rules, and will continue to follow the traditional DST rules unless the feature is disabled.

To completely disable all DST operation on JBCs and eScans:

1. Set your SERVO computer to ignore Daylight Saving Time:
  - a. Double-click the clock area of your Windows taskbar to open "Date/Time Properties."
  - b. Click the **Time Zone** tab.
  - c. Clear the "Automatically adjust clock for daylight saving changes" check box.
  - d. Click "Apply."
5. Manually compensate for incorrect time settings.
  - a. On the **Date & Time** tab the time on the SERVO computer so that the voting device will be set to the correct time.
  - b. Click "OK."

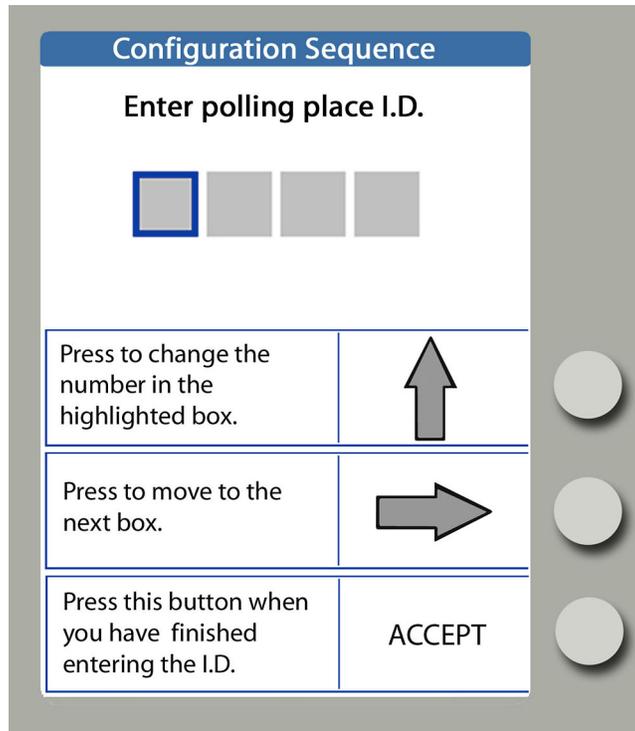


*For more information about compensating for DST, see Service Bulletin "Daylight Savings Time and the Hart Voting System" (April 2008).*

## Predefining

“Predefining” is the warehouse-performed process of assigning Polling Place IDs to JBCs and eScans before being deployed to those polling locations.

Once a device is predefined, that device and that MBB are then “married” to each other and will not work with any other MBBs or devices. To change the assigned polling location the device and MBB must be reset, which will delete *all* of their contained data.



- Remove the eScan or JBC from box. For JBCs, place face down.
  - If eScans are attached to their tubs, they may be predefined in this manner; however, be sure to transport the device either in its Hart-approved box, or, if left attached to the tub, secured both horizontally and vertically by tie-down straps in the vehicle’s cargo area.
- Test JBC batteries and replace as necessary. Connect internal batteries to prepare for polling place deployment.
  - To determine acceptable voltage levels, refer to “Battery Pack Test Procedures” in the *Support Procedures Training Manual*.
- If a new Signing Key has been created specifically for this election, program it to the device at this time.
- Power off the device and then insert an MBB. Secure the MBB door with a security seal.
  - Use the “Ballot and Seal Certificate,” “MBB Tracking,” and “JBC/eScan Serial Number” logs to properly track the MBB and security seal.
  - Be sure to use MBBs in the desired mode (Test or Election).
- Power the device on, and follow the prompts to predefine the device.



- o Always consult Early Voting and Election Day Polling Place Summary/Detail reports from BOSS to verify the correct Polling Place ID is being used.
- o Always double-check the device printout to verify the correct polling place has been assigned.
- Label the device and its transport container with the correct polling place.



*For step-by-step instructions for predefining, see “Predefining the JBC/ eScan Polling Place ID” in the Support Procedures Training Manual.*

- Do not connect eSlates to JBCs when predefining.
- After predefining JBCs or eScans, carefully check the configuration report to confirm the mode of the equipment, as well as polling place location and assigned precincts.

#### **If a JBC or eScan is predefined with the wrong Polling Place ID**

- If an incorrect Polling Place ID is accidentally entered while pre-defining a JBC or eScan and confirmed, complete the predefinition process. Then, reset the device using SERVO and begin the predefinition process again.

#### **Preventing “Old Election Data” or Audit Log errors**

- If a polling place device is powered on with an MBB installed, that device will then be associated with that particular MBB in the audit log, even if it is not predefined.
  - o If a different MBB will be installed later, the device must first be reset to clear the audit log.
- Do not insert and then remove MBBs from JBCs or eScans without resetting afterward to clear all audit logs.
- If using a JBC only for powering up eSlates to test buttons and power connections, do not install an MBB.
- If using a JBC with a Test Mode MBB to cast votes for testing or training purposes, always remove the MBB immediately after resetting. Do not power on the device to check the public count without first removing the Test Mode MBB.
- Predefined JBCs for use in a live election should not be connected to eSlates except in the polling place. Errors may result if predefined JBCs are connected to eSlates for testing purposes and then disconnected.



*Training courses and onsite support services are available from Hart to assist with equipment preparation. For more information, contact the Hart Professional Services team.*

## Voting Device Management

### JBC hinge pins

The JBC uses metal pins as part of the hinge mechanism for the printer and MBB doors. These pins may work themselves out with prolonged and vigorous use and twisting of the doors. This is similar to hinge pins on a door in your home working their way up. These pins can fall into the JBC and may cause internal harm. To determine if a pin has come loose, tilt the unit and listen for any loose objects inside. Do not twist the door to view the pins.

- If the JBC has a missing hinge pin on the printer door or MBB door, or if tilting the JBC causes a rattling sound:
  - Do not apply power to the unit.
  - Do not attempt to “shake” the pin out.
  - Do not twist the door to get a view of the pin joint.
  - Contact the Customer Support Center (CSC) to return the unit to Hart for RMA.



### CMOS batteries in JBC and eScan

Both the JBC and eScan contain a small coin-sized CMOS battery which needs to be replaced periodically. Like a computer’s internal battery, this allows the startup software and unique hardware configuration data to be stored in memory in order for the unit to operate properly.



Access to the CMOS battery requires opening the entire unit. This process *must* be performed by a certified Hart technician as part of the preventative maintenance program.

- If the battery is not replaced correctly, the unit will not power up.
- Typical life for JBC and eScan CMOS batteries is 3 to 4 years.

### JBC and eSlate Battery Packs ►

JBC and eSlate battery packs (white and black casings) are industrial grade batteries that have longest life available with the highest amperage available for alkaline batteries. The packs are not rechargeable batteries as this adds cost and weight to the voting units and creates disposal issues for jurisdictions.





*Batteries are consumables and have limited life. All alkaline batteries start minimal drainage once they have been engaged the first time (even when not in use). Purchase all battery packs from Hart.*

Dropping an eSlate or battery pack, even a few inches, can cause internal damage that may later result in leakage. Battery residue can be wiped using a shop rag soaked with club soda or a vinegar and water solution.

To attain the most life from a battery pack:

- Label each battery with the date it was received from Hart.
- Test batteries before and after every election, and label each battery with its power level and date of test.
- Store batteries outside of devices between election cycles.
  - Batteries may be disconnected after resetting and then reconnected immediately before deployment.
- Disconnect JBC and eSlate backup batteries before storage between elections, and before backing up or resetting equipment with SERVO.
  - The weight on top of a closed booth from improperly stacking could engage the "on" sequence (pressing "Cast Ballot" and "Enter" simultaneously) and drain battery power during storage.



*For information about properly backing up or resetting voting devices, see Training Bulletin "SERVO 4.1.6 Procedures Update" (May 2006).*

- Check eSlate cables for bent pins, which may result in limited power supply getting to an eSlate.
- Check power outlets at polling places to make certain that the units are getting a full supply of power and are not running on battery power (a weak supply of power may not impact the JBC batteries, but may impact the eSlates further down the chain).
- Remind poll workers to plug the JBC into AC power so the screen shows "[AC OK BATT OK]."
- Remind poll workers to plug in and turn on power strips.

### eSlate Data Ports

- Inspect eSlate booth rear ports before every election. These receive the most wear and tear during use at the polling place.
  - If pins in the port become damaged, replace the “pig tail” located inside the eSlate booth storage compartment. ▼

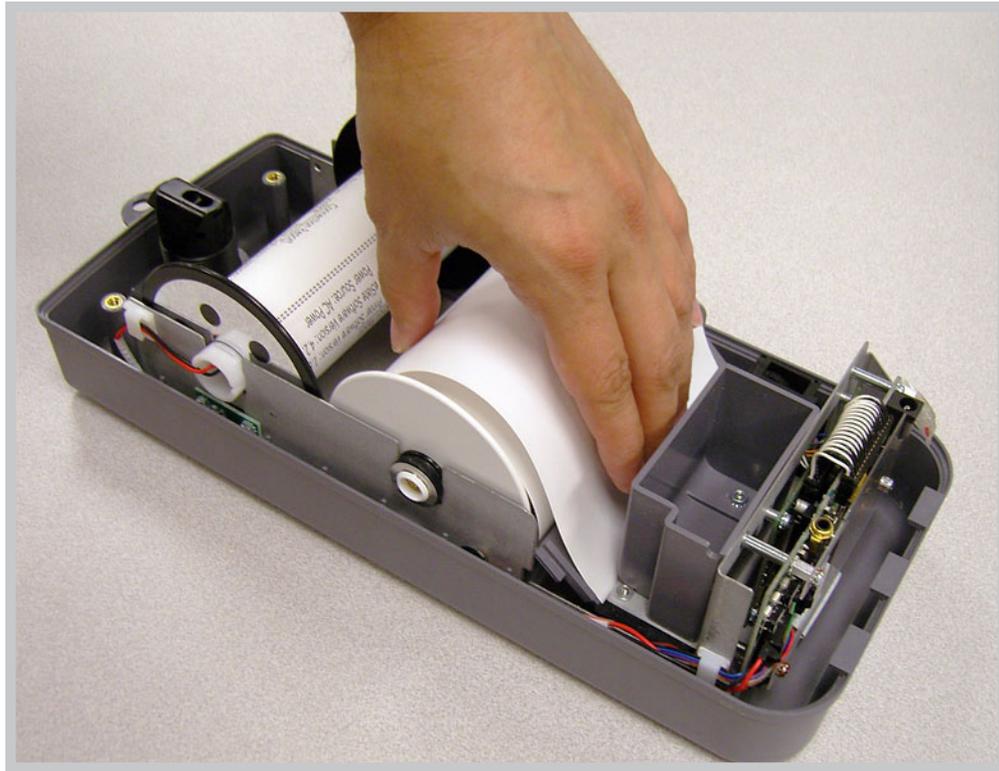


- Do not use “port protectors” on the rear of eSlate booths to protect the pins.

### Verifiable Ballot Option (VBO)

- Store VBO printers with the batteries disconnected between election cycles.
- Test and replace VBO printer batteries before every election.
- Only use power supplies labeled “For VBO Only” (if also equipped with eScans).
- To resolve VBO paper jams:
  - Never open a VBO to repair a paper jam during an official voting event as the paper inside may contain voters’ ballot selections; always replace an offending unit with a spare VBO.

- o Verify that the paper roll is properly fed along the angled platen ramp. ▼



- o Ensure the paper is attached securely to the take-up spool via the adhesive. ▶



For more information about handling VBO paper jams, see Training Bulletin "Verifiable Ballot Option Printer Jam" (September 2006).



#### **MONITORING PAPER USE ON VBOS:**

- After any type of non-election event (for example, logic and accuracy testing, poll worker training, public demonstrations, etc.), replace the entire VBO paper roll before using the VBO printer again for an official election.
- Never re-use a VBO paper roll that is less than 63 mm (2.5 inches) in diameter. This is about one-half of a roll of paper. Following this rule will ensure that the system accurately displays the low-paper warning.



- Use the “VBO Set-up and Planning Worksheet,” available on the *Hart Customer CD*, to estimate the number of ballots that may be cast before the VBO displays “EVBO-102” (paper low error).



*To obtain an additional Hart Customer CD, contact the CSC.*

- Monitor the public count on each eSlate and DAU at the polling place to anticipate the need for VBO replacement.
- For polling places with more than one eSlate or DAU, assign the same number of voters to each booth to prevent depleting paper in a more heavily used booth.

### **Election Night Equipment Receipt**

- Do a dry-run of receiving procedures before Election Night.
- Make sure to have an adequate level of trained staff available to assist poll workers in the equipment receipt area.
- Recruit community volunteers to assist poll workers with bringing in supplies (many jurisdictions use Scout organizations or volunteers from high school classes).
- Use lists to expedite check-in processes and the inventorying of equipment and supplies.
- Keep check-in procedures and forms as simple as possible. Train poll workers and receiving staff thoroughly.
- Keep all voting equipment together by site during the unloading process.
- Record receipt and movement of all equipment and MBBs on a chain of custody document.
- Have a team dedicated to resolving problems so that the other precincts’ check-in is not delayed.



## Overview

After all the work that you've put in to prepare for the election, you must execute Election Day polling place operations and support activities well in order for your election to succeed. You must plan ahead and provide for adequate poll worker training, field and central help desk support, and manage communications from the polling places (along with inquiries from the public). In this section you will find best practices for training poll workers, developing your support and communications strategy for Election Day, and managing lines at polling places.



## Pollworker Training

One of the keys to a successful election is for poll workers to run a smooth polling place. Poll workers must perform many different types of tasks throughout the day, and equipment operations should be the least of their concerns. As the adage goes, practice does indeed make perfect. The more time they can spend with the equipment before Election Day, the better.

Make plans for Poll Worker Training well in advance of the training season.

- For best results, make training as realistic as possible by using the same forms, logs, labels, seals, and other materials as they will be using at the polling place.
  - Use a ballot that looks similar to the ballot for the current election; for example, use a Primary ballot when preparing for a Primary election.
- Conduct Poll Worker Training before every election.
  - Experienced poll workers may feel that they know everything about the system, but reinforcing knowledge will keep them fresh and sharp in the polling place. New procedures need to be practiced, and poll workers will find that they can always learn something new.

- Make arrangements to have an adequate amount of space for hands-on activities, accessible AC power supply, and seating for all poll workers.
- Hands-on experience is a fundamental part of training and must be accommodated to maximize poll workers' learning.
  - Limit group sizes to 4 people per work station.
- Available training space will directly affect the number of poll workers that can be trained at one time.
  - Plan to provide additional training classes if necessary.
  - A standard Hart-conducted training class is limited to 24 people (six groups of four, space permitting).
- Provide adequate equipment to support the number of estimated groups per class.
  - If possible, designate equipment in inventory to use exclusively for training. As these devices will probably experience more wear and tear over time than devices typically do at the polling place, do not use this equipment in a live election—unless needed as spares.
  - If all equipment is deployed for the election, you may not have any equipment available for last-minute poll worker training.
- Plan Help Desk and field support contact numbers for Election Day support, and train poll workers on whom to contact and under what circumstances it is necessary to contact them.
- If training equipment must be used in a live election, it must be reset prior to use.
  - Confirm JBCs, eSlates, and eScans display that the device has been reset before powering down.



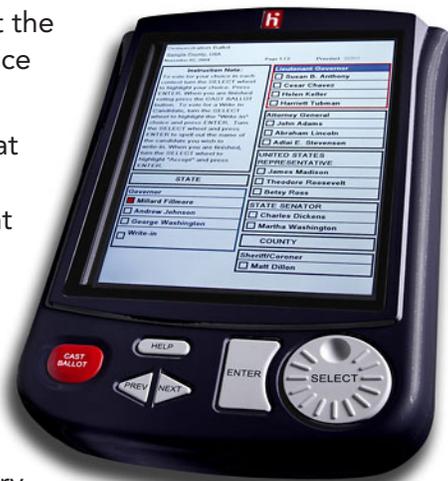
*Hart offers several Poll Worker Training services. One method is for Hart to train poll workers directly. Another method, "Train-the-Trainer," teaches your trainers how to effectively train poll workers themselves.*



### At the Polling Place

- Make arrangements with the polling place for storage of and access to equipment. Have an election-morning contact person to call if poll workers can't access the equipment or the polling place.
- Start setup early to allow time for troubleshooting, if necessary.
- Use a checklist to manage the polling place setup process.
- Check all power and data connections.
  - Only use grounded AC power outlets (i.e., three prong outlets). Do not use three-prong to two-prong adapters, as these are not properly grounded.
  - Use power strips with indicator lights to show that power is present.
  - Ensure that power switches on AC power strips are turned on.
  - If power at first seems unavailable, test the power outlet. It is not uncommon to have a bad socket in a power strip or a wall outlet.
  - Request that poll workers not plug voting equipment into the same circuit or outlet as other devices or appliances (such as space heaters, coffee pots, or crock pots).
  - For eScans and VBO printers, make sure that the power cords are firmly seated in the power "brick."
  - Ensure power cords to JBCs, eScans, VBO printers are connected.

- o Use an uninterruptable power supply (UPS) with eScans to provide battery backup.
- o Ensure that the JBC-to-eSlate cable is fully inserted and the screws have not been over-tightened.
- o Ensure that eSlate-to-eSlate cable connections are fully inserted and are not loose.
- o Verify that all eSlate “pig tails,” located inside the eSlate booth storage compartment, are connected.
- Set up eSlates and eScans to maximize voters’ privacy and keep the polling place free of obstacles.
  - o Create an efficient workflow within every polling place—a clearly designated entrance, voter qualification station, voting area, and exit.
  - o Set up eSlates and eScans so voters will not trip over cables. Otherwise, tape down all obstructing wires.
- Provide adequate instructions to voters. For example:
  - o Have a poll worker give instructions to voters waiting in line.
  - o Play “How to Vote” videos on televisions at polling places.
  - o Hand out voter instruction flyers as voters enter the polling place.
  - o Have a Demo eSlate available at the polling place for voters to practice with.
    - Use a practice ballot that is clearly different than the ballot for the current election.



To obtain voter education materials, contact the Customer Support Center (CSC) or your salesperson.

- Have Troubleshooters or Field Technicians assist with setup, if necessary.
- Ensure that booth feet are fully extended and not installed backwards.



For more information about safely assembling voting booths, see Training Bulletin “eSlate DAU Booth with Feet Installed Backwards” (September, 2006).

- Remember to deploy privacy screens.

- Booths must be assigned every time the JBC is powered up in order for them to be used.
  - Remember to press the “ENTER” button on each eSlate to assign the booth during the open polls sequence.
- Power on the VBO printer before powering on the JBC/eSlate daisy chain. This will lessen the occurrence of EVBO-101 error messages.
- On eSlates and DAU eSlates with VBOs, during the open polls process, ensure that the eSlate displays **Printer Status [OKAY]**, indicating that the VBO is properly connected to the eSlate.
- To avoid JBC report errors when using System 6.1, first print all needed JBC write-in reports, and then print all needed JBC Tally reports.



*For more information about the JBC write-in report error, see Training Bulletin “Hart Voting System 6.1 Write-in Report Error” (April 2006).*

### **Never reset HVS equipment on Election Day**

Do not reset eSlates, JBCs or eScans on Election Day unless no spare devices are available. If no spare devices are available, carefully consider the following:

- To avoid misperception by voters, always remove devices from the polling place before servicing with SERVO.
- Always confirm that data is backed up before resetting equipment.
  - Create a separate event for the backup named appropriately for the circumstance.
  - Remove MBBs from JBCs and eScans.
  - Disconnect eSlate batteries before backing up.
  - Even if there are no cast vote records on the device, back up the device anyway.
  - View the **Devices Backed Up** report to ensure that the backup was successful.
- After resetting, insert only new Election Mode MBBs into JBCs and eScans.

## Reducing Lines at the Polling Place

Although you cannot predict the exact turnout of any election, you can take measures to avoid common voting bottlenecks and reduce wait time at the polling place.



### Voter Registration

- Where hard-copy poll books are used, provide additional copies in the polling place.
- Ensure that there is an appropriate number of check-in tables with poll workers to staff them.
- Thoroughly test voter registration systems in an environment that closely resembles the high load and network congestion of Election Day.
- Train poll workers on the use of voter registration databases to expedite voter verification at the polling place.
- Develop backup processes for voter verification so that elections can proceed in the event of a system failure. Train Help Desk operators and Troubleshooters/Field Technicians on their use.

### Voting Process

- Institute voter outreach programs to educate voters about ballot layout, contests on the ballot (including lengthy measures), and the voting equipment itself.
- Pay special attention to ballot design. Technical aspects of ballot layout must be examined including typefaces, design for differentiating various contests, and numbers of columns per page.
- Distribute paper Sample Ballots to voters as they enter the polling place so they can read long propositions or referendum text before getting to the voting area.

### Voter Equipment

- Designate the appropriate number of voting machines for the number of voters registered in a precinct. The commonly used ratio is one electronic voting device for every 185 to 250 registered voters.
- Have an appropriate reserve of emergency backup equipment ready for immediate deployment.
- Properly test and verify the equipment prior to polling place delivery.



- Availability of adequate numbers of well-trained field support staff is critical to preventing equipment malfunctions or responding quickly to them.

### **Poll Worker Training**

- Provide quality poll worker training.
- Strive for clarity of documentation and manuals.
- Test whether poll workers are actually absorbing and retaining what is taught.
- Ensure training reflects what actually happens at the polls.
  - Use copies of the actual forms poll workers will be using.
  - Require poll workers go through a mock polling place component during training.



*Hart provides superior Poll Worker Training classes for first-time and experienced poll workers, as well as a Train-the-Trainer course designed to prepare you to conduct training classes yourself.*

### **Polling Places/Precincts**

- Select appropriate polling places and inform voters of those locations.
- Ensure that polling places are well laid out and are intuitive to voters to minimize problems and speed up the process for voters and poll workers.
- Ideally, there should be a single designated entrance and exit to the polling place.
- Utilize adequate signs for directing voters—especially in multi-precinct polling places or vote centers, or if the polling location has changed.
- Contact the local media to notify voters if polling places have changed locations.
- Make information available on your jurisdiction’s website.
- Additional methods to inform voters include stuffers in utility bills or hang-tags left on front doors.

### **Administration**

- Encourage voters to cast an absentee/by-mail ballot, or during the Early Voting period.
- Educate voters about what to expect in the polling place and of any changes to procedures or equipment.
- Set up equipment early enough to deal with potential problems.

- Have well-trained poll workers who can properly operate and troubleshoot equipment. Make tools for doing so available—such as dedicated phone lines in the election office—to enable quick responses to calls for assistance or backup equipment.
- Train field support staff to help manage lines at the polling place.
- Have an appropriate number of poll workers in each polling place.



To learn more about reducing voters' wait time, see the White Paper article "Long Lines" located at <http://www.hartec.com/pages/331>.

### Setting up Help Desk/Polling Place Communications

- Share your jurisdiction's Help Desk number with poll workers often—both in training and in Polling Place documentation.
- Use one phone number that will roll over to multiple lines or extensions. This will give poll workers one phone number to call, rather than a list phone numbers. Have multiple resources available to direct their calls.
- Set up a phone number that is separate from the main line to use exclusively for support calls.
- Share field support staff mobile-phone numbers only with Help Desk Operators, not with poll workers. Instruct them not to give out their phone numbers to poll workers.
  - It is best for poll worker to call your Help Desk to have their call directed to the appropriate resource, rather than contacting their technician directly as that person may be busy.
- Consider the layout of the Help Desk
  - The Help Desk should have one phone per operator.
  - Provide each workstation with a listing of phone numbers of all polling places, field technician cell phone numbers and the extensions of the other Help Desk operators.
- Use Help Desk Log sheets to track specific polling place issues
  - Every new call gets logged on its own log sheet.
  - Log sheets are used to record:
    - Polling place name
    - Caller
    - Call back number
    - Time of call
    - Description of the issue

- Operator's name
- Description of solution or escalation
- Log sheets follow the escalation of issues via hand-offs between operators and field technicians.



*Logs are available on the Hart Customer CD or in the Support Procedures Training Manual. To obtain an additional CD, contact the CSC.*

- Assign a Help Desk manager to monitor unresolved Help Desk and Troubleshooting logs and track their resolution.
- Enter logs into a spreadsheet or ticket resolution system to make the information readily available.
- A post-election review of Help Desk logs can show trends and is useful for directing future poll worker training.

### **Setting Up Field Technician Support Operations**

- Use personnel taken from the ranks of staff and temporary employees who are experienced with the polling place equipment as field support staff (also called "Field Technicians" or "Troubleshooters").
- Field support staff should receive training just prior to the election event.
- Only share field support staff mobile-phone numbers with Help Desk operators, not with poll workers.
- Give field support staff all applicable documentation:
  - Phone number call list (including Help Desk, voter registration/verification, and voter complaint line numbers)
  - List of precinct official working at the polling place
  - Polling place contacts
  - Polling place setup or layout information
  - Area road maps with polling places clearly marked
  - Open/close polls checklists
  - Site inspection checklist
  - Applicable troubleshooting addendums
  - Polling Place Operations Desk Reference
  - Troubleshooting logs
  - Additional forms
  - General office supplies

- Use documentation during training and send that documentation with field support staff after training.
- Field technicians should have appropriate equipment:
  - Mobile phone
  - "Spare" JBC (sealed with an MBB, but not predefined)
  - "Spare" eScan (sealed with an MBB, but not predefined)
  - "Spare" eSlate
  - "Spare" DAU eSlate
  - Extra Audio Cards
  - Replacement VBO printers
  - JBC printer paper
  - AC voltage tester for testing polling place outlets
  - Extra equipment battery packs
- Check equipment out to technicians immediately after training to distribute equipment efficiently.
- Set up a check-in station specifically for field technicians at the central counting station or substations to collect equipment at the end of the election event (e.g., Election Night).
- Instruct field support staff to stay within their assigned zone for the full assigned time, unless dispatched to another zone.
- Place one person in charge of deploying field support staff to best keep track of resources.



*Help Desk Operator Training and Field Technician Training are helpful services for any election. Order on-site election support from Hart as far in advance as possible. Support orders are usually handled on a first-come, first-served basis. Order services at least 2 months in advance to ensure support availability, particularly before major elections.*



# Reporting Best Practices

**Precinct Report — Unofficial**  
CITY OF HART, TEXAS — GENERAL ELECTION — May 09, 2009  
Page 1 of 38  
05/09/2009 09:21 PM  
Precincts Reporting 50 of 50 = 100.00%

**Canvass Report — Total Voters — Unofficial**  
SAMPLE COUNTY, TEXAS — GENERAL ELECTION — May 09, 2009  
Page 1 of 6  
05/11/2009 08:34 AM  
Precincts Reporting 38 of 38 = 100.00%

**Cumulative Report — Unofficial**  
SAMPLE COUNTY — GENERAL ELECTION — November 04, 2008  
Page 1 of 9  
10/30/2008 03:03 PM  
Precincts Reporting 8 of 35 = 22.86%

Total Number of Voters : 37,254 of 37,254 = 100.00%

Total Number of Voters : 1,048 of 30,421 = 3.44%

Total Number of Voters : 2,294 of 16,080 = 14.27%

Party	Candidate	Absentee	Early	Election	Total																		
<b>Presidential Electors, Vote For 1</b>																							
32	REP George W. Bush / Dick Cheney	75 7.17%	0 0.00%	102 8.65%	177 7.96%																		
33	DEM John F. Kerry / John Edwards	98 9.37%	0 0.00%	92 7.80%	190 8.54%																		
34	Michael Badnarik / Richard V. Campagna	92 8.80%	0 0.00%	98 8.31%	190 8.54%																		
50	David Cobb / Patricia LaMarche	85 8.13%	0 0.00%	112 9.50%	197 8.85%																		
51	Ralph Nader / Peter Miguel Camejo	80 7.65%	0 0.00%	100 8.48%	180 8.09%																		
52	Michael Anthony Peroutka / Chuck Baldwin	87 8.32%	0 0.00%	98 8.31%	185 8.31%																		
53	Gene Amundson / LeRoy Pletten	83 7.93%	0 0.00%	91 7.72%	174 7.82%																		
54	Stanford E. (Andy) Andress / Irene M. Deasy	93 8.89%	0 0.00%	88 7.29%	179 8.04%																		
55	Walter F. Brown / Mary Cal Hollis	83 7.93%	0 0.00%	102 8.65%	185 8.31%																		
57	Earl F. Dodge / Howard L. Lydick	93 8.89%	0 0.00%	95 8.06%	188 8.45%																		
58	James E. Harris / Margaret Trowe	91 8.70%	0 0.00%	102 8.65%	193 8.67%																		
59	Bill Van Arken / Jim Lawrence	88 8.22%	0 0.00%	101 8.57%	187 8.40%																		
61																							
94 - A																							
94 - B																							
95																							
106																							
111																							
112																							
113																							
114																							
<b>Totals:</b>																							
	<b>Cast Votes:</b>	1,048 96.58%	0 0.00%	1,170 97.36%	2,225 96.99%																		
	<b>Over Votes:</b>	10 0.92%	0 0.00%	10 0.83%	20 0.87%																		
	<b>Under Votes:</b>	27 2.49%	0 0.00%	22 1.82%	49 2.14%																		
<b>US Representative District 1, Vote For 1</b>																							
	DEM Diana DeGette	8 34.78%	0 0.00%	0 0.00%	8 34.78%																		
	REP Roland Chicas	6 26.09%	0 0.00%	0 0.00%	6 26.09%																		
	George C. Lily	9 38.13%	0 0.00%	0 0.00%	9 38.13%																		
	<b>Cast Votes:</b>	23 100.00%	0 0.00%	0 0.00%	23 100.00%																		
	<b>Over Votes:</b>	0 0.00%	0 0.00%	0 0.00%	0 0.00%																		
	<b>Under Votes:</b>	0 0.00%	0 0.00%	0 0.00%	0 0.00%																		
<table border="1"> <thead> <tr> <th colspan="3">Precincts</th> <th colspan="3">Voters</th> </tr> <tr> <th>Counted</th> <th>Total</th> <th>Percent</th> <th>Ballots</th> <th>Registered</th> <th>Percent</th> </tr> </thead> <tbody> <tr> <td>G</td> <td>1</td> <td>3.00%</td> <td>23</td> <td>1,350</td> <td>1.65%</td> </tr> </tbody> </table>						Precincts			Voters			Counted	Total	Percent	Ballots	Registered	Percent	G	1	3.00%	23	1,350	1.65%
Precincts			Voters																				
Counted	Total	Percent	Ballots	Registered	Percent																		
G	1	3.00%	23	1,350	1.65%																		
<b>US Representative District 7, Vote For 1</b>																							
	REP Bob Beauprez	82 35.04%	0 0.00%	0 0.00%	82 35.04%																		
	DEM Dave Thomas	71 30.34%	0 0.00%	0 0.00%	71 30.34%																		
	Clyde J. Harkins	81 34.62%	0 0.00%	0 0.00%	81 34.62%																		
	<b>Cast Votes:</b>	234 97.91%	0 0.00%	0 0.00%	234 97.91%																		
	<b>Over Votes:</b>	4 1.67%	0 0.00%	0 0.00%	4 1.67%																		
	<b>Under Votes:</b>	1 0.42%	0 0.00%	0 0.00%	1 0.42%																		
<table border="1"> <thead> <tr> <th colspan="3">Precincts</th> <th colspan="3">Voters</th> </tr> <tr> <th>Counted</th> <th>Total</th> <th>Percent</th> <th>Ballots</th> <th>Registered</th> <th>Percent</th> </tr> </thead> <tbody> <tr> <td>G</td> <td>8</td> <td>0.00%</td> <td>234</td> <td>1,603</td> <td>14.91%</td> </tr> </tbody> </table>						Precincts			Voters			Counted	Total	Percent	Ballots	Registered	Percent	G	8	0.00%	234	1,603	14.91%
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## Overview

Election reporting is one of the most visible and stressful processes in the election cycle. You are under pressure to release each update as quickly as possible, but there is no room for error. This section includes best practices for election reporting—including tips for rehearsing and timing reporting processes, using Tally, Rally/Tally communications, and Fusion operations.

## Rehearsing

Perform a Pre-election timing rehearsal of reporting operations before every Election Day. This will help catch any procedural gaps, encourage questions from staff, and put key staff members more at ease for Election Day operations. Identify and include all necessary personnel in this dry run so each aspect is understood beforehand.

Simulate the events of the evening, including, but not limited to:

- Absentee ballot processing and tabulation
- Any additional Logic and Accuracy Tests
- Early Vote tabulation
- Equipment receipt
- Equipment/poll worker/paperwork processing
- MBB transfer path
- Election Day vote tabulation
- Reporting cycles
- Reporting intervals
- Disaster preparedness (anticipating worst-case scenarios).



*Hart offers training services such as mock elections, disaster simulations, and "boot camps" to prepare you for Election Day.*

## Tally Best Practices

- To create a new Tally database, use the "New" button from the Election Databases tab.
- To open an archived Tally database (not a finalized BOSS database), use the "Import" button from the Election Databases tab.
- Use separate Test Mode and Election Mode databases for LAT and official results.
- Do not create a new Tally database by copying from an existing Tally database; if copying from a Test Mode LAT database, for example, all configurations (including test data write-ins) will carry over to the Election Mode database.

## Tally Updates and Tips

- In System 6.0 and 6.1, if performing manual vote adjustments, please note that the manual vote adjustment wizard has an incorrect label for the election source options: in "Absentee-Early-Absentee," the bottom "Absentee" source is actually "Election Day."



*For detailed best practices about manual vote adjustments, see Knowledge Base Article #3, “Best Practices for performing Vote Adjustments in Tally” (February 2008).*

- Purchase a backup Tally computer to keep ready at the counting location.
  - The Tally computer is a critical point of failure. Having a backup system ready to go, in addition to using proper back up procedures, will ensure prompt recovery in the event of an equipment failure.

## Tally Reporting

### Reports

For most occasions it is best to export the “Detail Vote Totals” from Tally for reporting to your Secretary of State’s office, although this varies from state to state. Always consult with your Secretary of State’s office to determine the proper report needed.



*For more information about exporting vote result details, see Service Bulletin #41, “Tally Export—Detail Vote Totals for Secretary of State” (November 2006), or Service Bulletin #47, “Tally Export—Detail Vote Totals for Texas Secretary of State” (November, 2008).*

### Importing Registered Voter Numbers into Tally

Although Registered Voter totals may be entered into BOSS when creating a ballot, at that time the numbers may not be official. To have more accurate reports on Election Night, the Registered Voter totals may be updated in the Tally application.

#### For HVS System 6.0–6.1

A comma-separated value (CSV) text file must be created manually and then imported into Tally. Once created, the file may be modified from election to election with current totals (assuming precincts do not change).

#### For HVS System 6.2.1

Registered Voter totals can easily be exported from Tally, modified using Microsoft Excel, and then imported back into Tally.

*For detailed steps for importing registered voter totals into Tally, see [Appendix E, “Importing Registered Voter Totals into Tally.”](#)*

## Reading MBBs

### Read Time Estimates

When performing pre-election testing of Election Night reporting processes, use test-mode MBBs predefined as an Election Day source to obtain an accurate estimate for reading Election Day device MBBs.

MBBs may take longer to be read depending on the type and amount of

information they contain. MBBs predefined as an Early Voting or Absentee source may take longer to read into Tally and will lead to inaccurate time estimates for the following reason:

- For Early Voting and Absentee MBBs, all precincts are active. Tally must perform updates for every precinct or precinct split in the election. Election Day MBBs only have the precincts associated with that polling place active.



*The Hart Card Reader, available for System 6.2.1 only, has significantly faster read times than a standard MBB card reader. To inquire about purchasing a Hart Card Reader, contact the Customer Support Center (CSC) or your salesperson.*

### **Error Messages**

If you receive a "Corrupt MBB" error message, do not attempt to read the MBB into any other Hart Voting System (HVS) application. This message may be caused by the following:

- One of the validated card sections has been damaged.
- The MBB has reached the end of its life.

To resolve the issue:

- Replace with an unused MBB written for the election if the MBB is discovered to be corrupt before being used to store election data.
- Generate a recovery MBB from the original device if the MBB contains live election data.:
  - For Ballot Now MBBs, refer to the *Ballot Now Operations Manual* to use the Ballot Now recovery method with a blank MBB (not from the current election) to recover the data.
  - For JBCs and eScans: use a blank MBB in SERVO to create a Recovery MBB from the respective device.



The recovery process will create an MBB with the same MBB ID as the MBB being recovered, so it cannot be an MBB already written for the election. Tally also will not read both the recovery MBB and the original MBB as they have the same MBB ID.

MBBs are consumables that have an average lifespan of 2 to 4 years and eventually need to be replaced.



*Additional MBBs can be purchased through the Hart catalog or your salesperson.*



*For more information about factors that affect an MBB's lifespan, see Knowledge Base Article #6: "MBB Lifespan" (June 2008).*

### **Rally/Tally Communication**

- When possible, use an Ethernet connection, since it is faster than a modem.
- Test remote communication prior to Election Day.
  - Make sure phone lines are working.
  - Make sure each Rally station can communicate with Tally.
- If using laptops as Rally stations, using an external mouse may be easier for operators than using the laptop's touchpad.
- Train all Rally operators thoroughly using a live network connection, complete with hands-on practice and run-throughs.
- Use a step-by-step procedural checklist and inventory check sheet.
- If using a modem, dedicate one phone line for Rally only. Make sure that there is a separate phone line available for voice communication.
- Be sure to back up your Rally database at the end of the night.
- After Rally/Tally activities are complete, verify the number of MBBs transferred to Tally.
- When connecting to Tally for the first time, the Rally operator will see a box asking to accept a trusted certificate from Tally. Do not press Enter. Rather, click "Yes" (because the "No" box is the one highlighted).

### **Fusion Operations**

Fusion merges multiple databases into one to produce a single source for election results. One or many Tally databases can even be combined with other voting system vendor's election databases to have one set of results.

In addition to Tally's basic reporting tools, Fusion offers a larger variety of reporting options.



*For inquiries about purchasing Fusion, or about Fusion's additional reports, contact the CSC or your salesperson.*

Since working with Fusion may require coordinating multiple sources of data many times throughout Election Night, special care must be taken to ensure the integrity of the election and not rush Fusion operations.

### **Using Written Procedures**

- To ensure consistent Fusion operations across many elections, employ written procedures (sometimes called a "Method of Procedure") to

detail all the necessary steps for producing election results timely and accurately.

- The written procedures should provide a detailed checklist of activities that must be performed at certain times. Using and updating this document for every election helps eliminate errors throughout the evening.

### **Transferring Results From Tally to Fusion**

Because the Tally and Fusion computers are not connected to each other via a local network, results from Tally are data files which must be physically transferred to Fusion. Depending on specific state requirements, Tally export data files may be transferred using:

- CD-Rs or DVD-Rs, which are the most reliable mediums,
- USB hard disks, or
- Flash memory devices (“jump drives”). This is the fastest way to transfer information from Tally to Fusion.

If transferring results using USB devices, before removing the device from the computer properly eject the device from Windows. To do so:

1. Close Tally.
2. Single left-click the Windows Unplug or Eject Hardware Tool (located by the clock).
3. Single left-click the device to eject.

Removing USB devices without ejecting first can cause data corruption, and can cause Windows to become unstable.

### **Merging Databases**

- In Fusion’s Import Wizard, use “New” to create one new source for each tabulation database you need to merge in Fusion.
- Once you have created one source for each tabulation database use only the “existing” option when importing results. Do not create additional “new” sources or else results may be duplicated.
- Create and use a checklist to ensure that the correct steps are followed on Election Night.
- Back up the Fusion database often.
- Use a team of two people to proof every Fusion report against the totals from each tabulation database before releasing the report.

### Importing Voter Registration Totals

The Fusion VR import format is not identical to the Tally VR export. Consult the Fusion and Tally manuals to determine what edits need to be performed.

The Fusion VR import requires the party field. The fourth field in each row must contain a valid party code from BOSS (such as "NP"), even for non-primary elections. For example:

```
registered_voters,precinct_name,split_name,party_abbreviation
472,"101","A","REP"
421,"101","B","DEM"
363,"101","C","LIB"
```

### Reports

- Write-ins do not appear on Fusion reports unless they have been resolved in Tally and added as a candidate during the Fusion import.
- The Press Display does not support display through a CRT television. The Press Display must be displayed on a device capable of 800 x 600 pixel resolution through a standard computer monitor cable, such as an LCD television.

2008 Presidential Election			
As of 05/18/2009 At 11:18 PM — 0 of 3,800 Voters = 0.00%			
Page 1 of 1		Precincts Reporting 0 of 7 = 0.00%	
<b>President</b>	0 Of 7 = 0.00%	<b>Proposition 1</b>	0 Of 7 = 0.00%
Abraham Lincoln	0 0.00%	For	0 0.00%
John Adams	0 0.00%	Against	0 0.00%
Zachary Taylor	0 0.00%		
Grover Cleveland	0 0.00%		
<b>United States Senator</b>	0 Of 7 = 0.00%		
Harriett Tubman	0 0.00%		
Walt Whitman	0 0.00%		
Fredrick Douglass	0 0.00%		
<b>Governor</b>	0 Of 7 = 0.00%		
Susan B. Anthony	0 0.00%		
Mark Twain	0 0.00%		
Cesar Chavez	0 0.00%		
<b>Mayor</b>	0 Of 4 = 0.00%		
Charles Dickens	0 0.00%		
Martha Washington	0 0.00%		
<b>County Judge</b>	0 Of 3 = 0.00%		
Betsy Ross	0 0.00%		
James Madison	0 0.00%		

**Back up/Restore**

- The Fusion backup process backs up all of the elections shown in the Existing Elections drop down list.
- The Fusion restore process overwrites all of the data stored in Fusion. Be sure all important election information is backed up before restoring a database in Fusion.

If you have upgraded to a newer version of Fusion, do not attempt to restore databases created in older versions of Fusion.



*If you need to view data from older Fusion backups, contact the CSC for assistance.*

**SERVO Reporting**

- If there are more than 255 precincts in a jurisdiction for a General Election, or 128 precincts for Primary, including splits:
  - o Use the Device CVR reports rather than the Votes by Precinct report to obtain cast vote record data.
  - o Reconcile polling place totals using the Device Connectivity Report



*For more information, see Service Bulletin "Display Error in SERVO 'Votes by Precinct' Report" (November 2006).*

Below is the list of documentation relevant to HVS Systems 6.0, 6.1, 6.2 and 6.2.1:

## **Operations Manuals**

- BOSS
- eCM Manager
- TRANS
- Ballot Now
- Rally
- Tally
- SERVO

## **Training Manuals**

- Management and Tasks
- BOSS
- Ballot Now
- Rally
- Tally
- Support Procedures
- Train-the-Trainer Handbook

## **Desk References**

- Early Voting for eSlate or both eSlate and eScan (with or without VBO)
- Election Day for eSlate or both eScan and eSlate (with or without VBO)

## **The Election Event User Guide**

## **The Best Practices Guide**

## **Training Bulletins**

- **English Audio Replaced with Vietnamese in Multilingual ballots**  
Filename: *TrainingBulletinLanguage\_020706.pdf*  
(February, 2006)
- **Ballot Now Ballot Printing**  
Filename: *TrainingBulletinBNprinting\_020606.pdf*  
(February, 2006)
- **SERVO eScan Clock Resetting Error in Systems 5 and 6.X**  
Filename: *TrainingBulletinSERVOClock\_032406.pdf*  
(March, 2006)

- **SERVO Party Filter Reporting Error in Systems 5 and 6.X**  
Filename: *TrainingBulletinSERVOparty\_032406.pdf*  
(March, 2006)
- **Working with the VBO Record Review Device**  
Filename: *VBO\_PaperRecountProc\_40406.pdf*  
(April, 2006)
- **Hart Voting System 6.1 Write-In Report Error**  
Filename: *Training Bulletin\_6.1JBCwritein\_4.17.06.pdf*  
(April, 2006)
- **Ballot Now Print Queue Files, Systems 4 through 6.1**  
Filename: *HVSTrainingBulletin\_BNQ456\_42106.pdf*  
(April, 2006)
- **Systems 4, 5, 6.0 and 6.1 Old Election Data Error Message**  
Filename: *TrainingBulletinOldData456\_050306.pdf*  
(May, 2006)
- **SERVO 4.1.6 Procedures Update**  
Filename: *TrainingBulletin6061resetSERVO\_50406.pdf*  
(May, 2006)
- **Training Poll Workers**  
Filename: *Training BulletinPWTraining\_050606.pdf*  
(May, 2006)
- **eScan Ballots with Stubs/Hart Voting Systems 5.0, 6.0, and 6.1**  
Filename: *TrainingBulletin\_stubline566.1\_6.1.06.pdf*  
(June, 2006)
- **Truncation of Audio in TRANS**  
Filename: *TrainingBulletinTRANSaudio\_62906.pdf*  
(June, 2006)
- **Judge's Booth Controller (JBC) Ver. 4.2.13 Errata Sheet**  
Filename: *JBC Errata 060712v2.pdf*  
(July, 2006)
- **System 6.0 Colorado Canvass Report in Tally**  
Filename: *TrainingBulletinCOcanvassrpt\_7.28.06.pdf*  
(July, 2006)
- **Systems 6.0 and 6.1, Connecting the VBO Printer to AC Power**  
Filename: *TrainingBulletinVBOprinter\_080306.pdf*  
(August, 2006)
- **SERVO Utility for eSlates Displaying the "Old Election Data" message**  
Filename: *HVSSERVOolddatautil\_81006.pdf*  
(August, 2006)

- **Colorado State Post-Election Audit Procedures**  
Filename: *COauditwithHVS\_81006B.pdf*  
(August, 2006)
  - **Hart Voting System 6.2 and 6.2.1 JBC Tally Report Error**  
Filename: *Training Bulletin SplitPcts6.2\_83106.pdf*  
(August, 2006)
  - **Verifiable Ballot Option Printer Jam**  
Filename: *TrainingBltn\_VBOspool\_91206.pdf*  
(September, 2006)
  - **Setting up a Bilingual Straight Party Contest in BOSS**  
Filename: *TrainingBltn\_BOSSstrprty\_91906.pdf*  
(September, 2006)
  - **JBC Device Backup**  
Filename: *TrainingBltnSERVOJBCdata\_929.06.pdf*  
(September, 2006)
  - **eSlate DAU Booth with Feet Installed Backwards**  
Filename: *TrainingBltn\_DAUfeet\_92906.pdf*  
(September, 2006)
  - **System 6.2 eScan Two Sheet Ballot Rules**  
Filename: *Training Bltn\_eScan2SheetBallot\_92906.pdf*  
(September, 2006)
  - **VBO Paper Low Indicator Marks**  
Filename: *TrngBltn\_VBO\_paperlowindicator\_101206.pdf*  
(October, 2006)
  - **Hart Voting System 6.2 and 6.2.1 VBO Paper Low Warning (102)**  
Filename: *TrainingBltn\_VBOpaperlow6.2\_100406.pdf*  
(October, 2006)
  - **Copy and Paste into BOSS and TRANS**  
Filename: *TrainingBltn\_CopyPasteBOSSTRANS\_103106.pdf*  
(October, 2006)
- Service Bulletins**
- **Verifiable Ballot Option Printer Battery Life**  
Filename: *SrvcBltn\_VBObatteries\_103006b.pdf*  
(October, 2006)
  - **Display Error in SERVO "Votes By Precinct" Report**  
Filename: *SrvcBltnSERVOvotesByPct\_111006.pdf*  
(November, 2006)

- **Ballot Now Service Bulletin, Hart Voting System 6.2 and 6.2.1**  
Filename: *SrvcBltn\_BNSC6.2.X\_120606.pdf*  
(December, 2006)
- **Hart Voting System VBO Power-Up Sequence**  
Filename: *HVSSrvcBltnVBOpowerup\_12507.pdf*  
(January, 2007)
- **Daylight Saving Time and the Hart Voting System**  
Filename: *HVSSrvcBltnDST\_Revised\_041008.pdf*  
(April, 2008)
- **#40, Backup Battery Drainage in Verifiable Ballot Option (VBO) Printer**  
Filename: *SB0040\_VBOBattDrainage\_030107.pdf*  
(March, 2007)
- **#41, Tally Export—Detail Vote Totals for Secretary of State**  
Filename: *SvcBulletin.TallyExport.DetailVoteTotals.11.27.06.pdf*  
(November, 2006)
- **#42, AC Power Supply Service for eScan Ballot Scanner**  
Filename: *SB0042\_eScanPowerBrickService\_05.01.08.pdf*  
(May, 2008)
- **#43, On-Demand Ballot Printing Procedures for Hart Voting System**  
Filename: *SB0043\_Ballot Printing Procedures\_042007.pdf*  
(April, 2007)
- **#44, eSlate/DAU Battery Indicator and Battery Power**  
Filename: *SB0044\_eSlateBatt\_042607.pdf*  
(April, 2007)
- **#45, N/A—Hart Records Management-related.**
- **#46, N/A—Hart Records Management-related.**
- **#47, Tally Export—Detail Vote Total for Texas Secretary of State**  
Filename: *SB0047b\_TallyExport DetailVoteTotals 110408.pdf*  
(November, 2008)
- **#48, MBB Card Procedures in SERVO When Adding Events for Backup**  
Filename: *SB0048\_MBBProceduresSERVO\_071907-b.pdf*  
(July, 2007)
- **#49, Ballot Now Paper Management Practices for Washington 2008 Presidential Primary**  
Filename: *SB0049\_BallotNowWA2008Primary.010208.pdf*  
(January, 2008)
- **#50, Format Specification for TRANS Audio Files**  
Filename: *SB0050\_TRANSFormatSpecs\_012408.pdf*  
(January, 2008)

- **#51, Ballot Now Scanner Maintenance for All Versions of the Hart Voting System**

Filename: *SB0051\_ScannerMaintenance\_012408.pdf*

(January, 2008)

- **#52, EDX Files and Fusion Results Imports in a Primary Election**

Filename: *SB0052\_FusionEDXImport\_013008.pdf*

(January, 2008)

- **#53, Recommendations for eScan Storage and Transportation**

Filename: *SB0053\_eScanTransport\_022808.pdf*

(February, 2008)

- **#54, Hart Card Reader**

Filename: *SB0054\_CardReader\_041108.pdf*

(April, 2008)

- **#55, Creating and Processing Two-Sheet Ballots for the eScan in System Versions 6.0 and 6.1**

Filename: *SB0055\_eScan\_TwoSheetBallots\_6061\_08.13.08.pdf*

(August, 2008)

- **#56, Recommended Scanners for 8.5x17" Paper Ballots**

Filename: *SB0056\_8.5x17.ballotscanners\_10.02.08.pdf*

(October, 2008)

- **#57, Memorandum to Colorado Hart Voting System Customers— Custom Reporting for November 4, 2008 General Election— Withdrawn Amendments**

Filename: *SB0057\_Memo\_CO\_WithdrawnAmendments\_*

*TallyReporting.102008.pdf*

(October, 2008)

#### **Knowledge Base Articles**

- **#1, Using eCM Manager to Create and Write Signing Keys**

Filename: *KB0001\_Using\_eCM\_Manager\_to\_Create\_and\_Write\_Signing\_Keys.pdf*

(October, 2007)

- **#2, Best Practices for Ballot Now**

Filename: *KB0002\_Best\_Practices\_for\_Ballot\_Now.pdf*

(October, 2007)

- **#3, Best Practices for Performing Vote Adjustments in Tally**

Filename: *KB0003\_TallyVoteAdjustments\_022908-b.pdf*

(February, 2008)

- **#4, Hash Testing for Installed Software**  
Filename: *KB0004\_HashCodeTesting\_040308.pdf*  
(April, 2008)
- **#5, Electrostatic Discharge Stations for Processing Hart Voting System Equipment**  
Filename: *KB0005\_ESDforHVSEquipment\_52308.pdf*  
(May, 2008)
- **#6, Mobile Ballot Box Lifespan and Recommendations for Use**  
Filename: *KB0006\_MBBLifespan\_060408.pdf*  
(June, 2008)
- **#7, Ballot Quality Assurance**  
Filename: *KB0007\_BallotQA\_070208.pdf*  
(July, 2008)
- **#8, Best Practices for Ballot Design with the Hart Voting System**  
Filename: *KB0008\_BallotDesign\_081808.pdf*  
(August, 2008)
- **#9, FAQ for Hart Official Ballot Paper**  
Filename: *KB0009\_FAQHartBallotPaper\_01.15.08.pdf*  
(January, 2009)
- **#10, Return Merchandise Authorization (RMA) Process**  
Filename: *KB0010\_RMAMProcess\_021009.pdf*  
(January, 2009)
- **#11, How to Back up, Clean off and Restore Election Databases for HVS Applications**  
Filename: *KB0011\_Backup\_Clean\_RestoreDB\_022509.pdf*  
(March, 2009)

#### **Delta Documents**

- **Hart Voting System 6.0**  
Filename: *TrainingHVSystem\_6.0Delta\_8.31.06.pdf*  
(August, 2006)
- **Hart Voting System 6.1**  
Filename: *TrainingHVSystem\_6.1Delta\_2.27.06.pdf*  
(February, 2006)
- **Hart Voting System 6.2**  
Filename: *TrainingHVSystem\_6.2Delta\_9.5.06.pdf*  
(September, 2006)
- **Hart Voting System 6.2.1**  
Filename: *TrainingHVSystem\_6.2.1Delta\_8.11.06.pdf*  
(August, 2006)

# Appendix B: Parallel Testing Procedures

B

*The information presented here is a compilation of data from Travis County, Texas' County Clerk's Elections Division; the Brennan Center; the Government Accounting Office, the State of California; and the Maryland State Board of Elections. We extend our gratitude to these sources.*

## **Materials Needed**

1. Paper ballots
2. "Hat" and slips of paper representing each precinct
3. Randomly selected Early Voting and Election Day polling location equipment
4. Ballot Boxes with seals per polling location
5. Secured location with video surveillance
6. Equipment log (for equipment serial number and seal serial number)
7. Ballot log (for Election ballots removed from service)
8. Spreadsheet, hand count or scan results from voted paper ballots

## **A. Ballot preparation**

1. For each precinct included in the election, mark a slip of paper with that precinct name/number and put those slips into a "hat." Have a member of the public randomly select slips for the number of precincts/pieces of equipment that will be tested.
2. Create a set number of ballots equivalent to projected turn out of the active election.
3. Paper ballots are generated using an Election Mode MBB for the active election in Ballot Now.
4. Election personnel randomly select and vote ballots for the parallel test (clearly filling option boxes using a black ink pen) from live election stock. It is recommended that multiple ballots are selected from each precinct or ballot style randomly chosen.
5. Log the number of ballots selected per precinct for Parallel Testing and the serial numbers of those ballots (if applicable).
6. Create a hand-count tabulation document or spreadsheet, or scan ballots with an eScan or Ballot Now to tabulate voted ballots.

**Note:** Parallel Testing may be accomplished by pulling ballots first or pulling equipment first and then printing or pulling corresponding precinct ballots, but either must be preceded with a true random drawing.

**B. Polling location equipment**

1. Select at least 1 Early Voting and 1 Election Day polling location during the day of delivery of equipment. Select equipment based on the random selection of ballots during the Ballot Preparation phase (e.g., if a precinct 101 ballot was selected, then a precinct 101 set of equipment will be tested).
2. 1 JBC and at least 1 eSlate (or the full compliment of eSlates per live polling place location used in the election) should be pulled and replaced with spare equipment for each parallel test. Log equipment serial numbers.
3. Equipment should be placed into designated secured area and prepared for use. (See "Secured Area" detail.)
4. Equipment should be clearly marked as PARALLEL TEST EQUIPMENT.

**C. Ballot box preparation**

1. Gather 2 ballot boxes with seals (1 Early Voting ballot box, 1 Election Day ballot box).
2. A seal is placed and locked on the ballot box.
3. The seal is recorded and kept with parallel test materials.
4. The seal is not broken until the end of each parallel test period.

**D. Secured area**

1. Setup all parallel test equipment where all actions are visibly recorded by video surveillance. Video camera must be capable of recording all votes as they are cast on the eSlate.
2. Clearly mark the test area with PARALLEL TEST— AUTHORIZED PERSONNEL ONLY signs.
3. All Parallel Testing activity takes place in the secured area.

**E. Casting votes**

1. On Election Day or on the first day of the Early Voting period *and* at Open Polls time, elections staff turns on JBC, assigns booths 1–3, prints zero tape, opens polls, tears off tape and keeps in ballot box with first day's records. Ideally, the test is repeated each day of the Early Voting period on that same Early Voting equipment.
2. Teams of two cast votes on each eSlate. One team member calls the votes off the ballot, and highlights the votes as they are cast. The second team member votes the votes on the eSlate and calls out each vote as they are selected.

3. The Team Member 1 obtains the bundle of ballots and corresponding parallel test for the specified day (i.e., Day 1 Early Voting or Election Day) from the Parallel Test administrator.
4. Check that the video camera is on and is focused on the eSlate screen in a manner that votes can be seen as they are entered. Check the camera periodically to make sure that it is still operating correctly.
5. Team Member 1: Take a ballot from the top of the stack and place it on the eSlate screen so the camera can record the ballot number (the number at the bottom left of the ballot).
6. Team Member 2: Say the ballot number so the video camera can record it.
7. Team Member 1: Issue an Access Code for the precinct *and* ballot style that appears on the top right of the ballot, and have the Team Member 2 enter the Access Code.
8. Team Member 2: Call out the precinct *and* ballot style number that is on the top right of your electronic ballot.
9. Team Member 1: If the number is correct, initial the precinct/style number on the Access Code.
10. Begin voting on eSlate following the votes marked on the paper ballot as follows:
  - a. Team Member 1: Call out each vote, including write-in votes, as marked on the ballot. As each vote is called, highlight each box that is marked on the ballot with yellow highlighter.
  - b. Team Member 2: As each vote is called, enter the vote on the eSlate. Enter any write-in votes as they appear on the ballot.
  - c. Team Member 2: Call back the votes cast as they appear on the summary screen(s).
  - d. Team Member 1: As the Team Member 2 calls back each vote, highlight each voted box on the ballot in pink highlighter.
  - e. Team Member 2: Once all votes have been cast and verified, press the cast ballot button and say, "ballot voted."
  - f. Team Member 2: Verify on VBO, if applicable, and press the cast ballot button and say, "ballot verified and cast."
11. Special Instructions for Straight Party Voting
  - a. Team Member 1: Call out the straight party vote as marked on the ballot. Highlight only the voted straight party box on the ballot in yellow highlighter.

- b. Team Member 1: Check for any crossover voting and votes cast in local entity races that may appear at the end of the ballot. Call out these votes to the Team Member 2 and highlight the votes in yellow as you call each vote.
  - c. Team Member 2: As each vote is called, enter the vote on the eSlate. Voting straight party will automatically fill in all candidates for that party in each race. If there are crossover votes, change those votes as the Team Member 1 calls them. Be sure to vote all crossover votes and votes in the special elections that may appear at the end of the ballot
  - d. Team Member 2: Call back all votes cast in all races as they appear on the summary screen(s).
  - e. Team Member 1: As the Team Member 2 calls back the votes, highlight each box on the ballot in pink highlighter. Note that the straight party votes will not be marked on the ballot. Please verify that the vote was cast for the candidate in the correct party.
  - f. Team Member 2: Once all votes have been cast and verified, press the cast ballot button and say, "ballot voted."
  - g. Team Member 2: Verify on VBO, if applicable, and press the cast ballot button and say, "ballot verified and cast."
12. Once ballot has been cast clearly print testers' initials, team number, date, and time vote cast on the top right hand corner of the paper ballot.
  13. Clearly print the ballot precinct or style and time vote was cast on the parallel test log.
  14. Staple the Access Code to paper ballot on top left hand corner. Collect all ballots from the same precinct and clip these together.
  15. Insert precinct-grouped paper ballots into ballot box.

#### **F. Tabulation of results**

1. For the Election Day test, close the polls on the JBC and print the Election Day tally from the JBC at Close Polls time on Election Day.
2. Remove VBO printout, if applicable, and place with Election Day tally tape.
3. For the Early Voting test, once the parallel test is completed, suspend polls and print reports. All materials should be labeled "Parallel Test completed, EV Day N," booths should be sealed, and equipment should be stored in the secured area.

4. Remove VBO printout, if applicable, and place with Early Voting equipment tape.
5. On Election Day and before live election results are tabulated, create an Election Mode database in Tally named "PARALLEL TEST—*Name of election.*"
6. Read MBBs from parallel test equipment.
7. Tabulate results.
8. Print Cumulative reports.
9. Compare JBC tally reports, Tally software reports, VBO printouts (if applicable), SERVO reports (See "Back up equipment") and expected test data results.
10. If all results match, close and back up the parallel test Tally database, and continue with live election tabulation.
11. If all results do not match, stop operations and identify mismatch before continuing to live election tabulation.\*
  - a. Review SERVO reports first—this will help to identify human error when entering data into the voting device.
  - b. Verify hash codes of firmware on parallel test equipment again—this will identify and changes in the firmware before, after, or during Parallel Testing.
  - c. Have an individual who was not involved in testing compare reports and look for discrepancies and root causes.
  - d. Review video tape for human error.

#### **G. Back up equipment (SERVO)**

1. Using SERVO create an event using the same naming convention in Tally (for example, "PARALLEL TEST—*election name*").
2. Back up all parallel test equipment to this event.
3. Print out the "Devices backed up report."

**Note:** Although it is highly unlikely that tabulation of results and reconciliation can take place before live election results tabulation, this is the ideal scenario. In reality, reconciliation may need to be accomplished using equipment reports, SERVO reports, paper ballots, and VBO printouts (if applicable) until such a time as the Tally application can be used to run Parallel Test reports with the Election Mode MBBs.

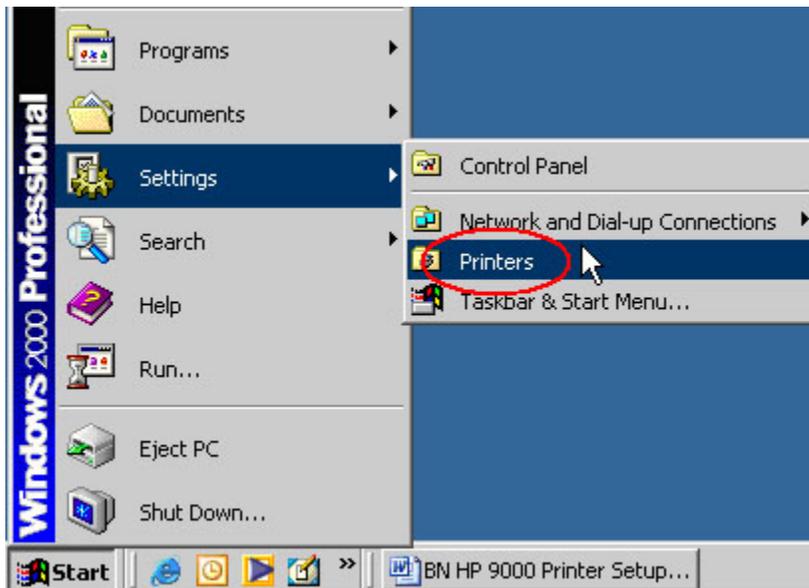


## HP 9000 Printer Driver Setup in Windows 2000 Professional

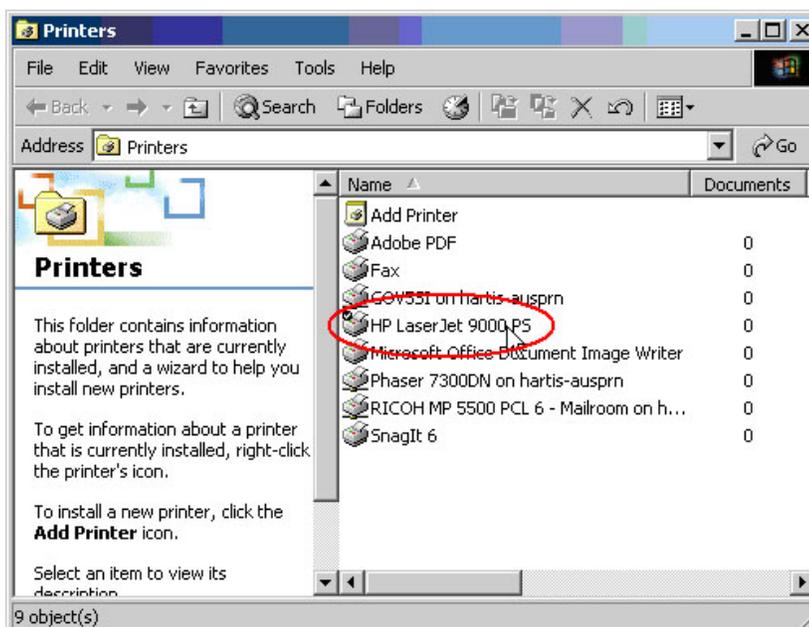
Before following these instructions for driver setup, the HP LaserJet 9000 PS drivers must have been previously installed from disk or download.

Important: Be sure to initiate the setup from **Start > Settings > Printers** rather than modifying the printer settings from within an application.

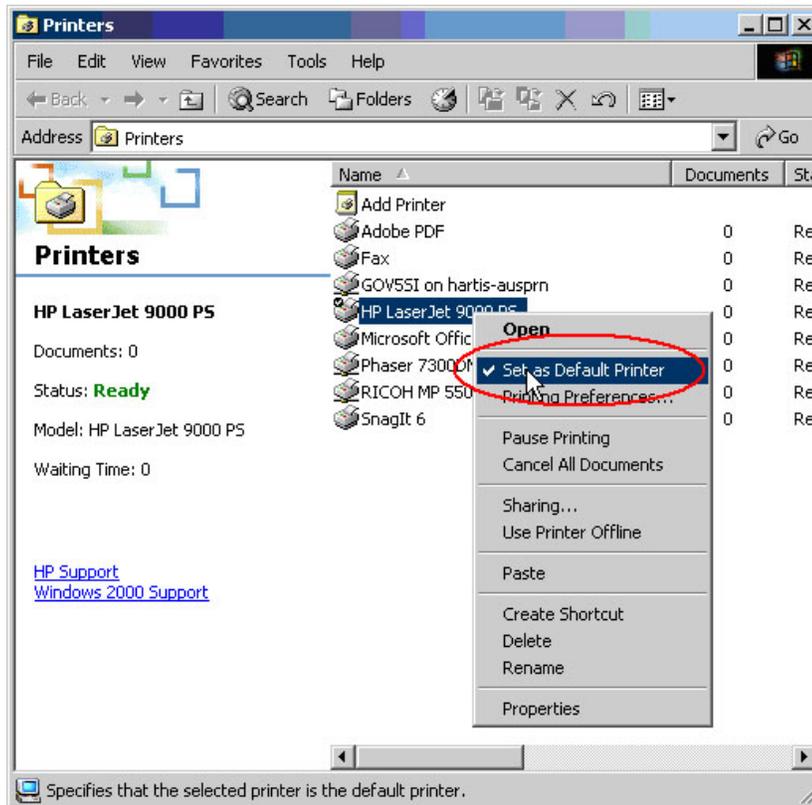
1. Select the printer menu from Settings:



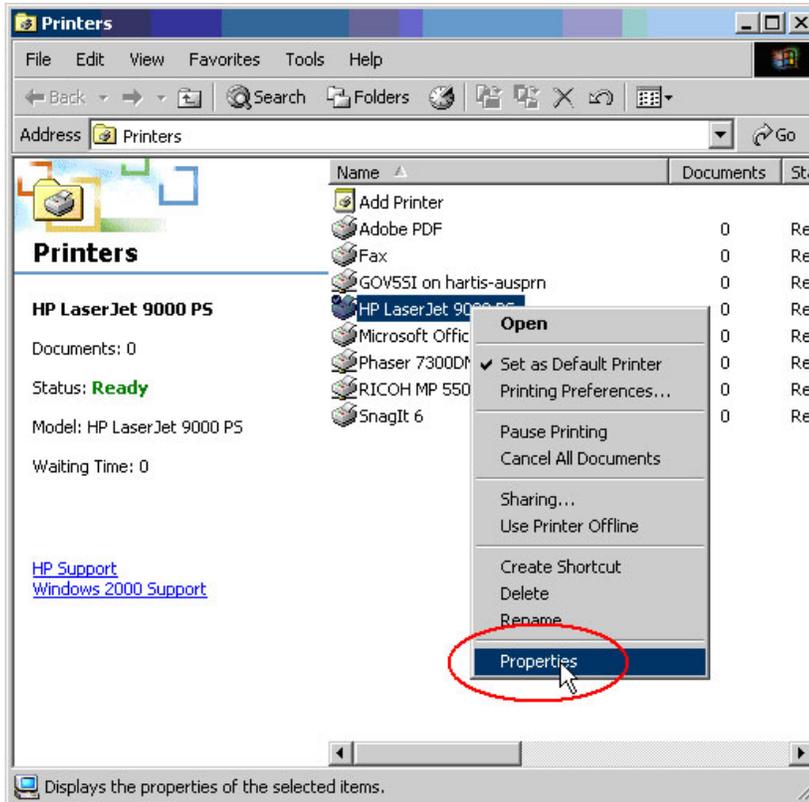
- o Find the 9000PS Printer:



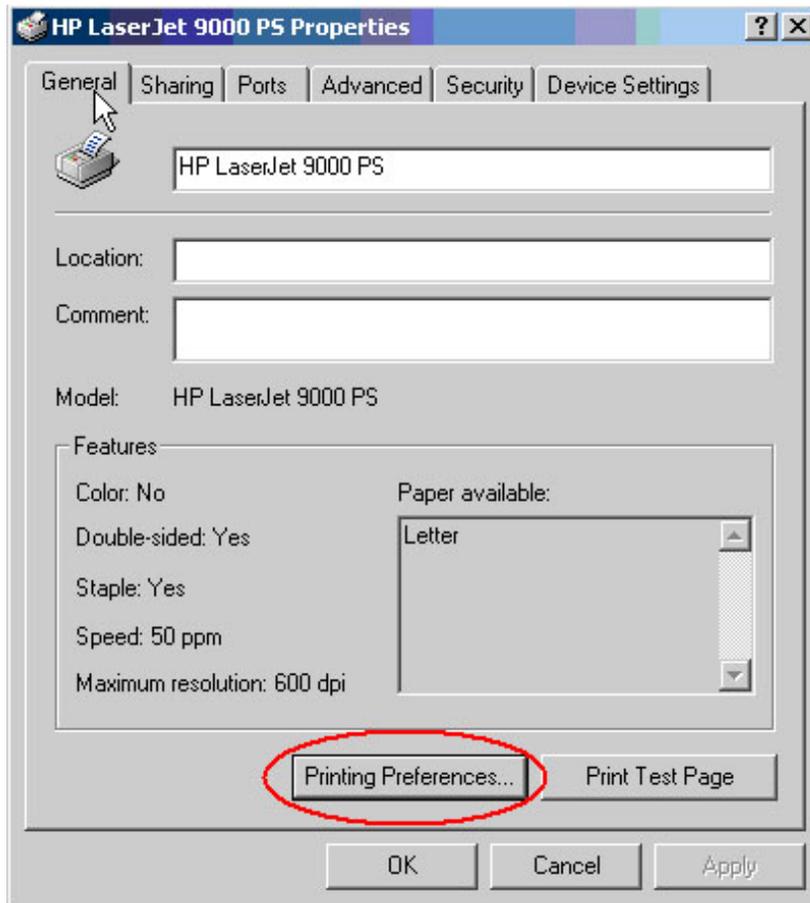
- o Right-click on the selected printer and select "Set as Default Printer."



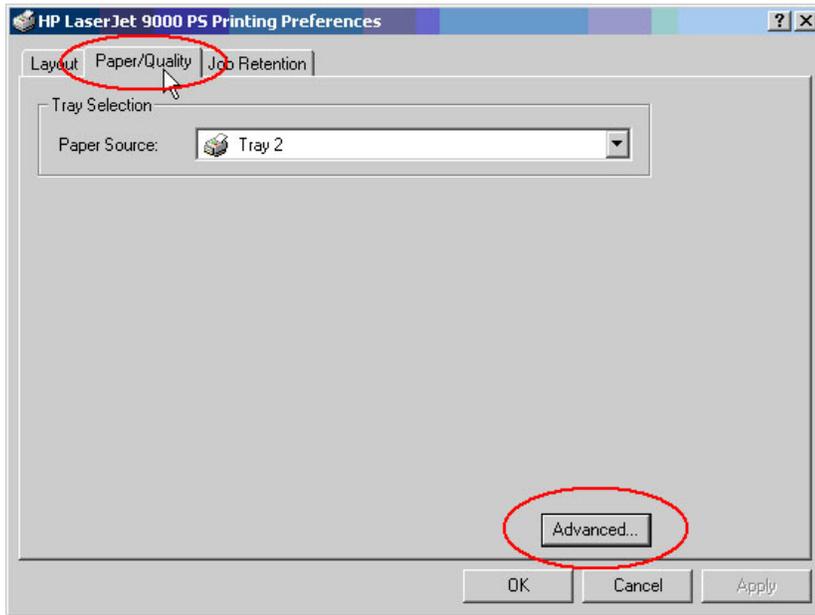
- o Right-click on the HP9000 again, and select **Properties**.



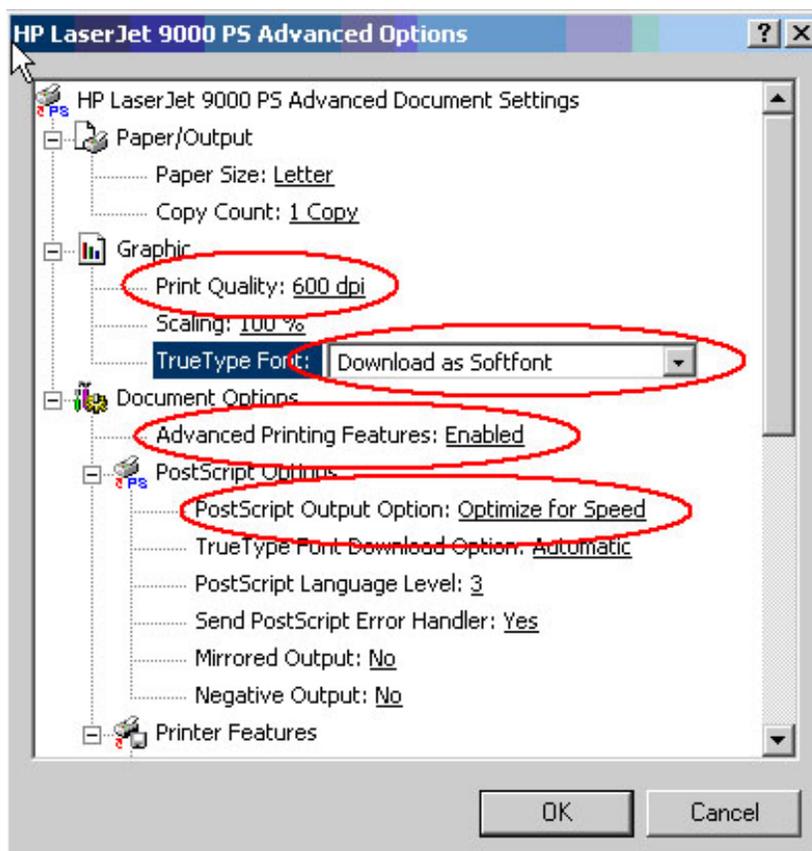
2. On the **General** tab:
  - o Select **Printing Preferences**.



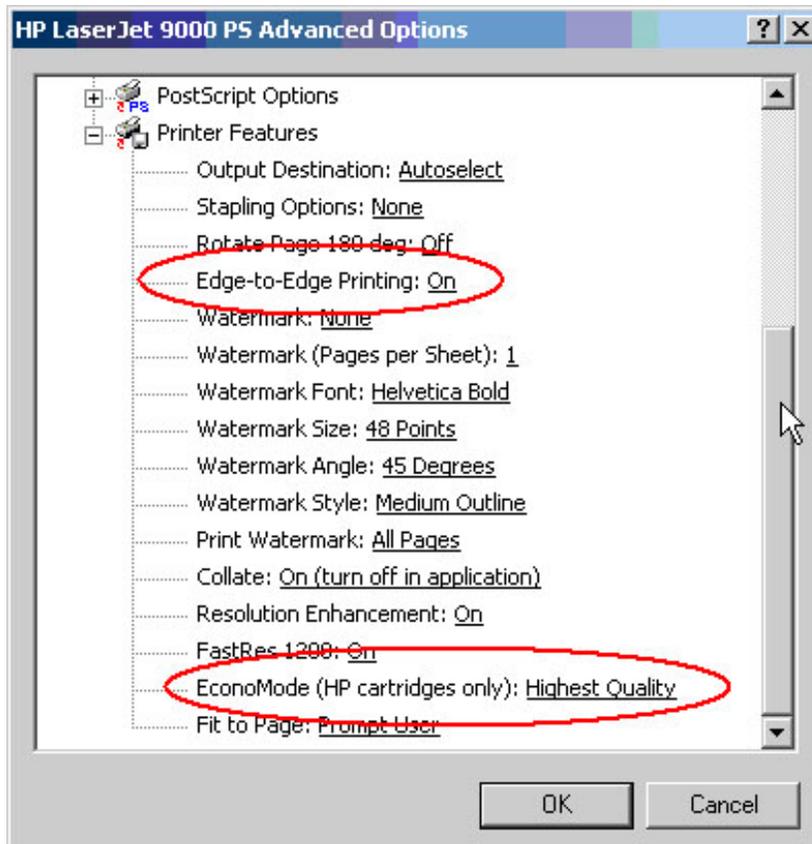
- 3. On the **Paper Quality** tab:
  - o Select **Advanced**.



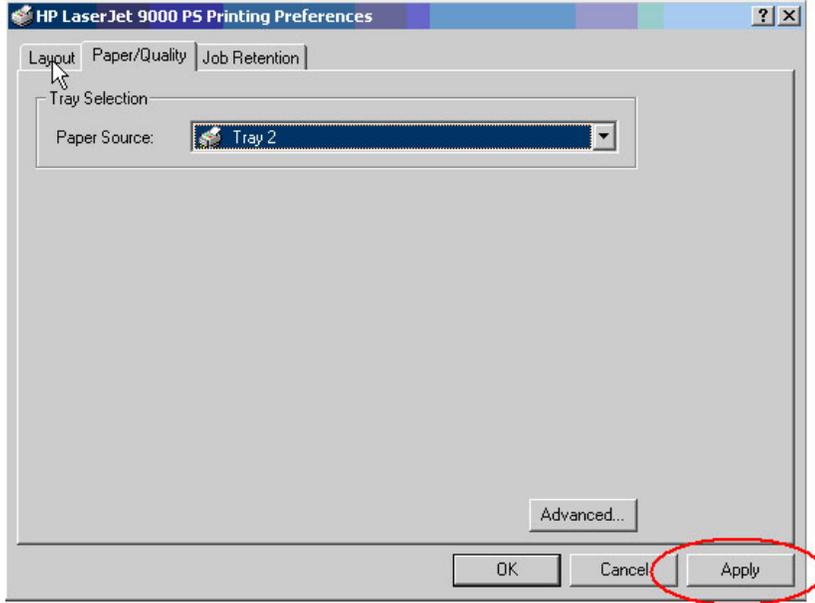
4. Select the following:
  - o Under **Print Quality**, set for **600 dpi**.
  - o Under **Graphic**, set the **TrueType Font** to “**Download as Softfont**.”
  - o Under **Document Options**, set Advanced Printing Features to **Enabled**.
  - o Under **Postscript Options**, set **Postscript Output Option** to **Optimize for Speed**.



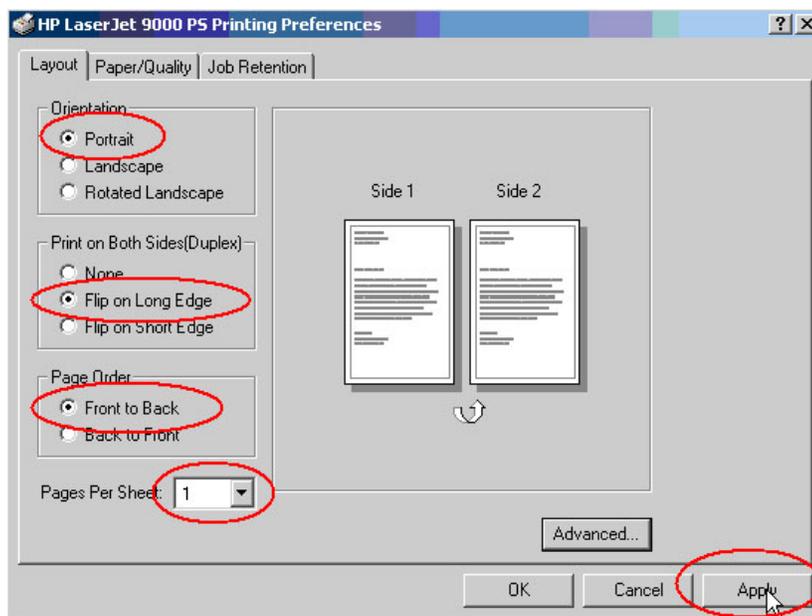
5. Scroll down to the **Printer Features**:
  - o Under **Edge-to-Edge Printing** select **On**.
  - o Under **EconoMode** select **Highest Quality**.
  - o Select **OK**.



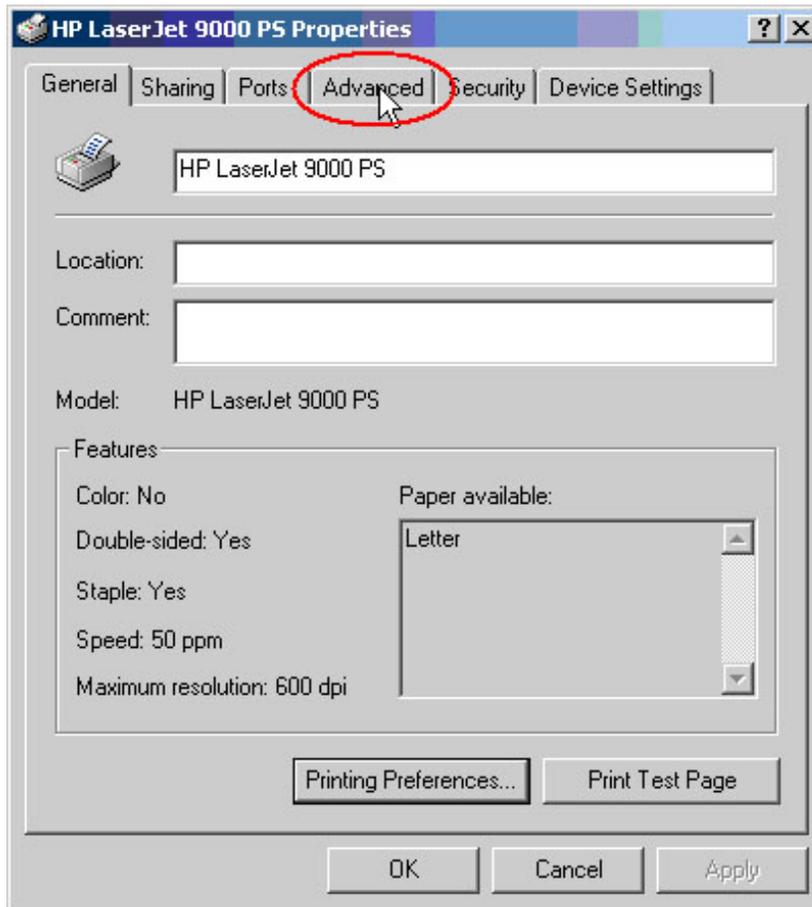
6. Select **Apply**.



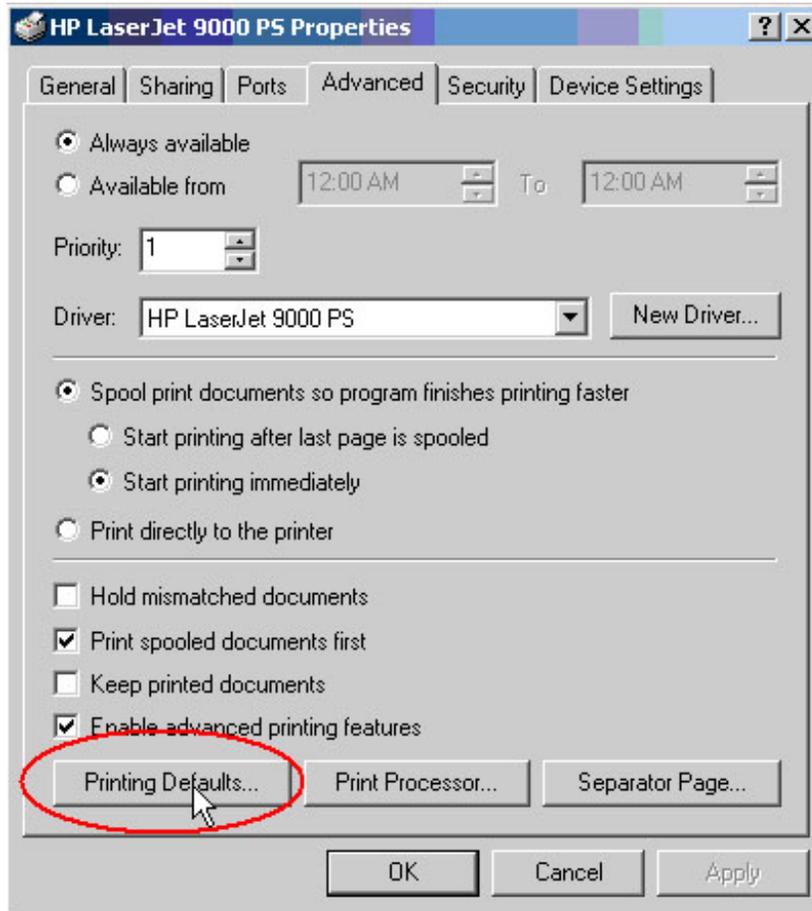
7. On the **Layout** tab select the following:
- o Set **Orientation** to **Portrait**.
  - o Set **Print on Both Sides** to **Flip on Long Edge**.
  - o Set **Page Order** to **Front to Back**.
  - o Set **Pages Per Sheet** to **1**.
  - o Click **Apply** first.
  - o Then click **OK**.



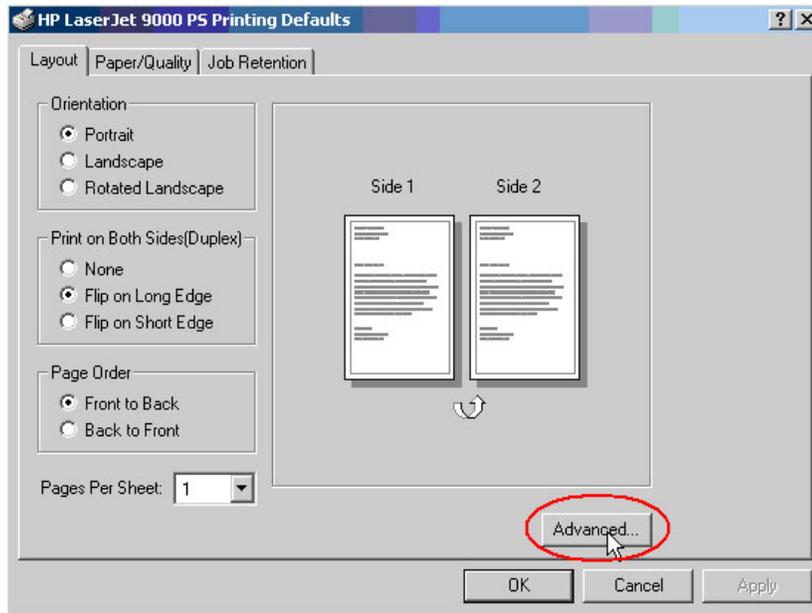
8. This brings you back to the **General** tab of the Properties window.  
Select the **Advanced** tab.



9. On the **Advanced** tab, set all the options as shown below, then select **Printing Defaults**.

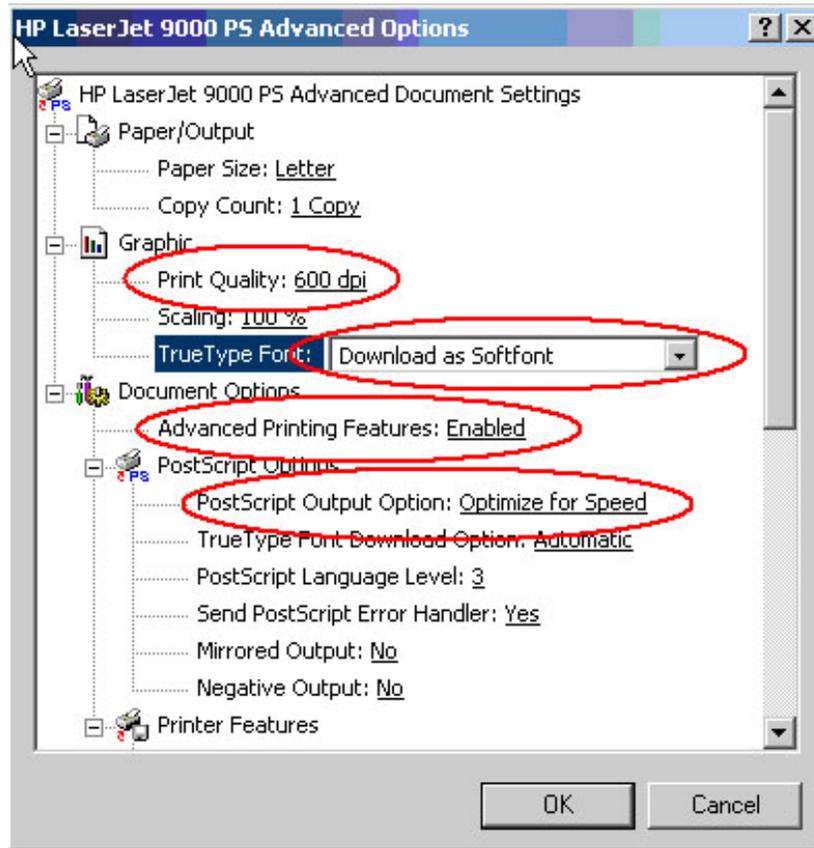


10. In Printing Defaults, confirm that all the layout selections made in Step 7 are correctly selected here. Select **Advanced**.



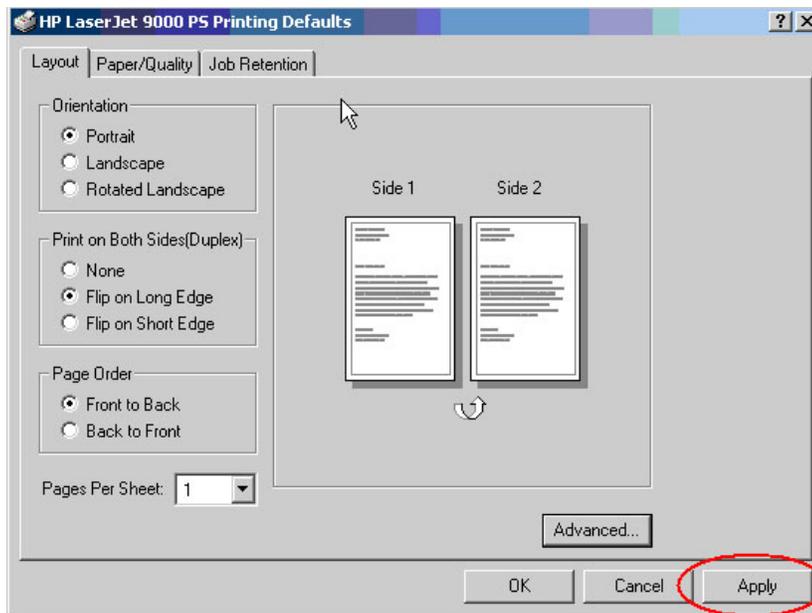
11. Scroll through this screen confirming that all of the selections that were made in Steps 4–5 are made here as well.

- o Choose **OK**.

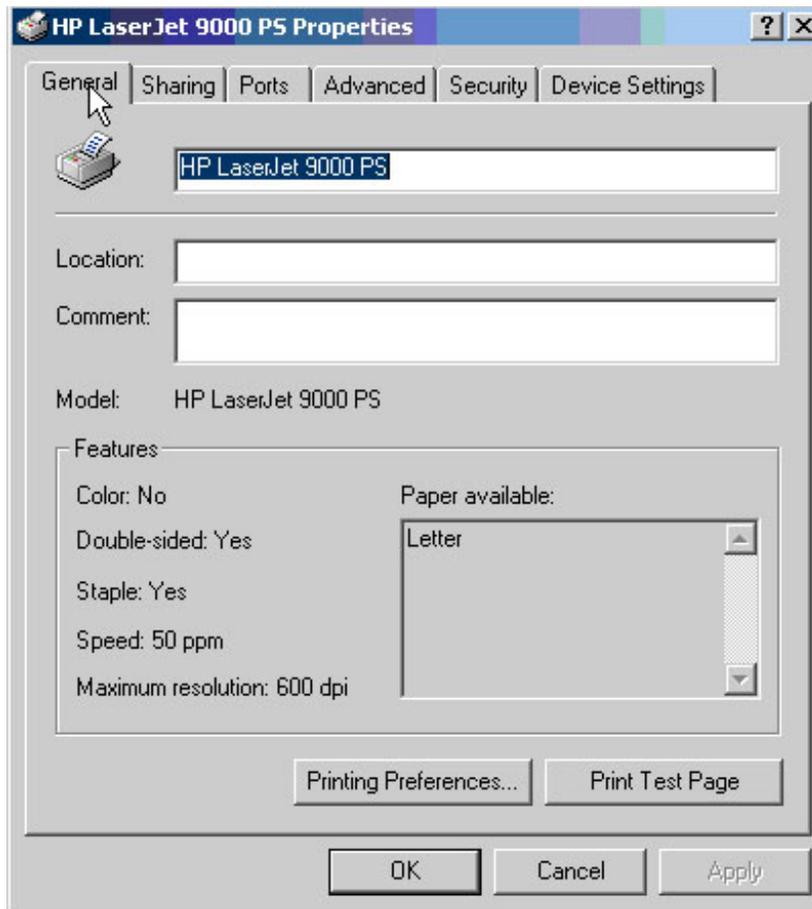


12. The Layout tab will re-appear. If changes were made, the Apply button will be highlighted.

- o Click **Apply**.
- o Click **OK** when done.



13. On the **General** tab:
  - o Click the **Apply** button if highlighted.
  - o Click the **OK** button when finished.



The printer driver is now set up.

Ballots will now print properly whether printed directly from Ballot Now or printed from a PDF file. Verify this before every election with your designated production print vendor.



## Appendix D: Creating a Print Queue File

D

Begin by creating a file folder on the desktop for setting up a preliminary spreadsheet. Later this data in this spreadsheet will be saved to a comma separated text file (.csv). Each row represents will represent one line in the text file and will provide to Ballot Now the number of ballots to print for the precinct indicated in the first field of the line. The [Preliminary name].xls file will also serve as a backup of the original print queue setup.

Use the following fields for the columns in the spreadsheet.

'precinct name'		'partyname'	'ballot type'		'language'	number to print	external record id	row number
'101-A'	0	'REP'	'Election'	2	Spanish	57	12345	1
'101-A'	0	'DEM'	'Election'	2	Spanish	42	12345	2
'103'	0	'REP'	'Election'	2	Spanish	95	12345	4

- 'PRECINCT NAME' Is always in single quotes and always matches BOSS precinct/split format.
- 0—the second field is always zero.
- 'PARTYNAME' is always in single quotes and is either NP or the Party code. **Note:** when NP is replaced by a double pipe in BOSS, then this field matches BOSS text: '|'|.
- 'BALLOT TYPE' is either 'Election' or 'Test' and is always in single quotes.
- 2—The fifth field is always the number two.
- 'LANGUAGE'—Language name is always in single quotes and matches the spelling in the Ballot Now drop-down language choice field.
- NUMBER TO PRINT is the quantity of ballots for the precinct in field one and is numeric with no single quotes.
- EXTERNAL RECORD ID is an open numeric field with no single quotes; this number could be a sequence number used by a voter registration system or other data file export number.
- ROW NUMBER is numeric with no single quotes, must be unique within the file, non-negative and in ascending order, although not required to be contiguous.

If using the BOSS export of the precinct.txt file as the source for the precinct name, copy and paste the precinct name into the first column of the spreadsheet.

When possible, use a text export from a data source that provides both the precinct number and split precinct number with the desired quantity of ballots to print for that precinct or split. Open the data export file in Excel, copy the precinct and quantity information and paste into the correct fields of the preliminary print queue setup spreadsheet. Some examples of suggested data export files include:

- Total number of mail ballot requests for each precinct for the first bulk mail out.
- Number of mail ballot requests for each precinct for each batch of ballots to be mailed (by day, group of days, etc.).
- Number of ballots per precinct for polling sites for Early Voting.
- Number of ballots per precinct for Election Day voting.
- Number of ballots per precinct for provisional balloting.

Identify the proper spelling and capitalization of the Precinct, Language and Party fields by opening Ballot Now Print Ballots dialog window and view the drop-down choices for these fields.

When the spreadsheet is complete:

1. Delete the first row to remove the column headers.
  2. Save the worksheet as an **.xls** file.
  3. Save the worksheet as *[Preliminary name].csv*.
  4. Copy the **.csv** file and paste into a new folder (perhaps named Production Files).
  5. Rename the extension from **.csv** to **.txt** and open in Notepad to view. This leaves the original **.csv** file unchanged and filed with the original **.xls**.
- Verify that:
    - Single quotes are on either side of the precinct name and other text fields.
    - Remove any single quotes around numerical fields if necessary.
    - Commas separate all fields.
    - The last line in the file has no line return. Each line represents a new command to Ballot Now and if a blank, or empty, line exists in the file the print command will fail.

Once the format of the text is corrected and verified, save the text file with the name appropriate to the contents (e.g., *EV\_300.txt*). Then copy the file and save in a new folder named BNP FILES.

- Change the **.txt** extension to **.bnp** and save (for this example the file would now be *EV\_300.bnp*).
  - Copy this file into the **c:\Program Files\Hart InterCivic\Ballot Now\Print Queue\BNP folder**, where Ballot Now Print Server can be directed to find the file to use to produce ballots or ballot files.
    - Ballot Now deletes the BNP file as soon as the file is processed, so always **copy** from the **Desktop\Production\BNP Files** folder and paste into the folder that Ballot Now will use.
    - For ballot files to send to a print vendor, set Ballot Now to “Print to file” in Program Options. The print server will create a PostScript (**.ps**) file with the same name as the original input file.



## For Systems 6.0–6.1

A CSV text file must be created manually and then imported into Tally.

To do this:

1. Create a spreadsheet in Excel with the following columns:
  - a. Register Voters
  - b. Precinct Name
  - c. Split Name
  - d. Party Code
2. Enter data in the appropriate fields.
3. Save the document as a Comma Delimited text file (.csv).
4. View the document in Notepad to inspect for formatting errors.
5. Import the CSV text file into Tally.

### Example spreadsheet

Register Voters	Precinct Name	Split Name	Party Code
314	Aldercreek 1	1	NP
271	Aldercreek 1	2	NP

### Example CSV file

Register Voters, Precinct Name, Split Name, Party Code

314, Aldercreek 1, 1, NP

271, Aldercreek 1, 2, NP

## For HVS System 6.2.1

Registered Voter totals can easily be exported from Tally, modified using Excel, then imported back into Tally. To do so:

1. Once you have set up the Tally database for the election, open the database.
2. Go to "File," then "Export" to open the Wizard.
3. Click "Next."
4. Choose "Registered Voters."
5. Click "Next."
6. Tally will ask you to specify a location to place the export file. Choose a location, and name the file "Tally VR Export.csv" (without the quotes).
  - o If the BOSS database is set up as a Primary, be sure to choose "Export by Party."

- o If the BOSS database is set up as a General, then *do not* choose "Export by Party."
- 7. Click "Next." Close the Wizard.
- 8. Exit Tally.
- 9. Double-click the CSV file you created to open it in Excel.
- 10. Fill in your registered voter numbers manually. If it is for a primary election be sure to only fill in registered voter numbers by split in the "NP" rows. Ignore the other partisan rows.
- 11. When finished, click "Save." Excel will tell you that the selected file type does not support multiple sheets. Click "OK."
- 12. Excel will then tell you that the format of this file may contain functions that are not compatible with CSV files. Click "Yes."
- 13. Exit Excel. It will ask you if you want to save changes. Click "No."
- 14. Open Tally and open your Election Database.
- 15. Click "File," then "Import." This brings up the Wizard.
- 16. Click "Next."
- 17. Select "Registered voters."
- 18. Click "Next."
- 19. Browse to your CSV file.
- 20. Click "Open."
- 21. Click "Next." The Wizard loads the numbers into the database.
- 22. Close the Wizard.

Your Registered Voter numbers are now in Tally.

## Overview

This section describes the capabilities and limitations of the BOSS feature to display graphics on ballots (System 6X). Graphic images can be selected in BOSS for display on the eSlate and on paper ballots.

## Ballot Images

Images that appear on a ballot are associated with ballot elements entered in BOSS. For example, adding an image to a proposition contest in BOSS will cause that image to be displayed in the title of that proposition contest. The ballot elements that may be associated with images and their positions are shown below (Table 1 and Figure 1). Note that images cannot be associated with candidates.

**Table 1. Ballot elements that can accommodate images.**

Ballot Element	Location	Comment
Ballot Header	A	Party image for primary ballots. –OR– NP Party image for non-primary elections.
Straight Party Title	B	
Straight Party Option	C	Image associated with party.
Straight Party Option	D	Image associated with party.
Ballot Text	E	
Proposition Title	F	
Candidate Title	G	
Ballot Instruction	H	

*The locations of images on the ballot are shown in Figure 1 on the next page.*

Figure 1. Location of images on ballot.

The diagram illustrates the layout of a ballot with various sections and image locations marked with letters A through H:

- A**: This is the ballot header. Below it are the text elements: "Image Election", "Image Test", and "November 02, 2006".
- B**: Located in the "Straight Party Contest" section.
- C**: Located next to "The Red Party" in the "Straight Party Contest" section.
- D**: Located next to "The Blue Party" in the "Straight Party Contest" section.
- E**: Located in the "This is Ballot Text (not instruction)" section.
- F**: Located in the "Proposition Contest" section.
- G**: Located in the "Candidate Contest" section.
- H**: Located in the "This is ballot instruction text" section.

Additional text on the ballot includes "Page 1 / 1" and "Precinct aaa".

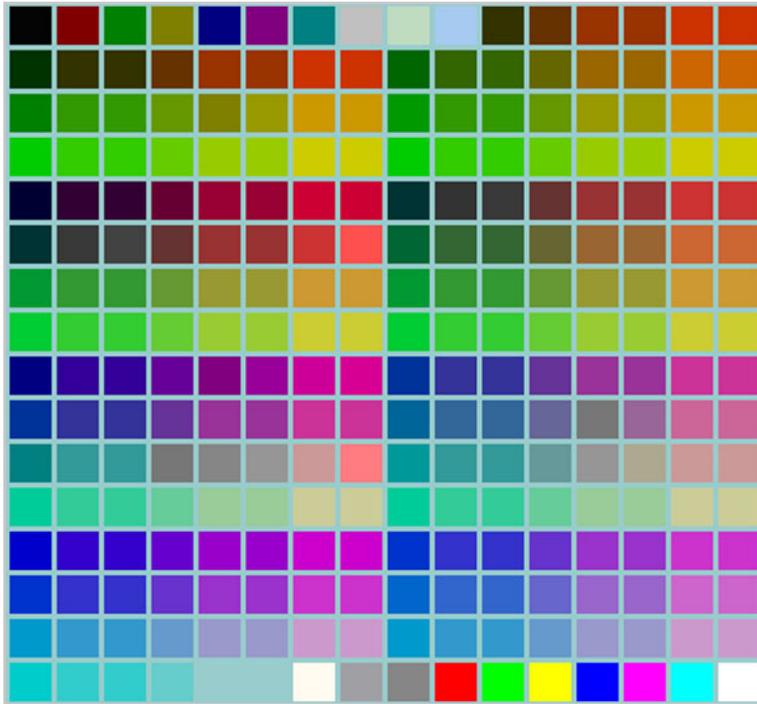
**Image Requirements**

BOSS only loads image files in Bitmap format. The bitmap image colors are converted to a pre-defined palette. The images are not scaled when placed on the ballot. The size of the image when it is loaded into BOSS will determine the size on the ballot.

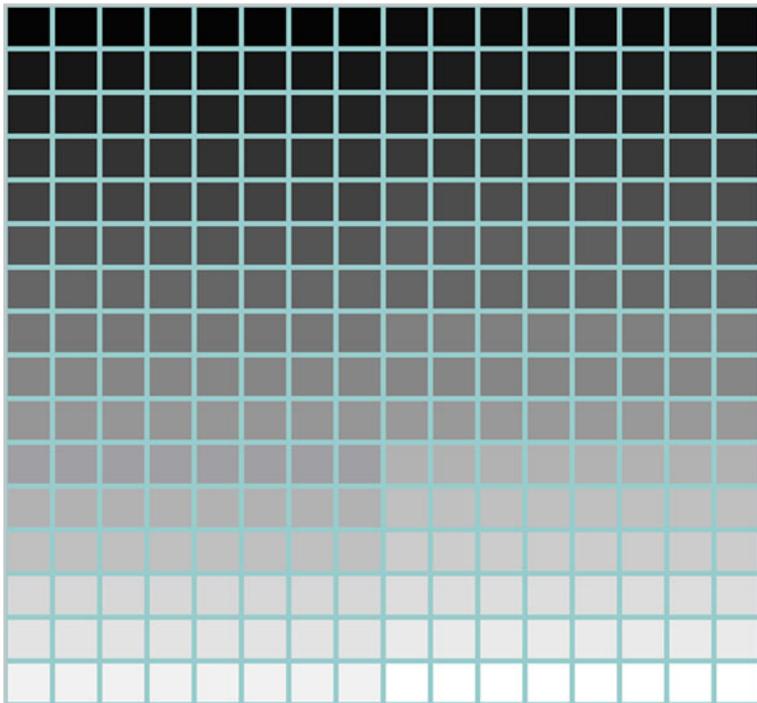
**Image Palette**

The images displayed on the eSlate use the standard window color palette of 256 colors (Figure 2). BOSS will convert images for eSlate to this color palette if necessary, however better results may be achieved with external photo editing applications. Images for paper ballots use a grayscale palette (Figure 3) of 256 colors. BOSS will convert images for paper ballots to this palette.

**Figure 2. Standard Windows Palette**



**Figure 3. Grayscale palette**



### Image Size

Image size is determined by the size of the image loaded in BOSS. The image is not scaled or re-sampled for display on the ballot. The resolution of the eSlate images should be 72 dots-per-inch (DPI). The resolution of the image for paper ballots should be 254 DPI. BOSS does not enforce the resolution, but failure to follow these recommendations may result in ballot graphics that are larger or smaller than expected.

The position of the image is determined by the template selected for ballot generation. The recommended image sizes (Table 2) should be used to scale images before loading into BOSS. If the images are larger than the recommended size, they may overlap other ballot elements. Images are arranged in the center of the available space if they are smaller than the recommend size.

The following table provides a starting point for sizing images. It is best to examine the images in the BOSS ballot preview window. If changes are necessary, resize the original image outside of BOSS then reload the image. Free software utilities available on the Internet, such as "PixResizer," are easy to use and suitable for this purpose.

**Table 2. Recommended image sizes for 2-column ballots.**

Ballot Element	Location	Image Size for eSlate	Image Size for Paper Ballot
Ballot Header	A	100 W x 100 H	200 W x 200 H
Straight Party Title	B	250 W	600 W / 400 W
Straight Party Option	C	20 W x 20 H	50 W x 50 H
Straight Party Option	D	20 W x 20 H	50 W x 500 H
Ballot Text	E	250 W	600 W
Proposition Title	F	250 W	600 W
Candidate Title	G	250 W	600 W
Ballot Instruction	H	250 W	600 W

### Transparency

All eSlate images are assumed to be "transparent." The pixel in the upper left corner of the image is used to determine the transparent color. All pixels in the image that have the transparent color will be displayed as the background color. The preview does NOT show the transparency. Paper ballots do not use transparency. All pixels from the paper ballot images are displayed.

**Acronyms**

<b>ADA</b>	Americans with Disabilities Act
<b>ANSI</b>	American National Standards Institute
<b>ASCII</b>	American Standard Code for Information Interchange
<b>ATA</b>	Advanced Technology Attachment
<b>ATI</b>	Audio-Tactile Interface
<b>BOSS</b>	Ballot Origination Software System
<b>BNIP</b>	Ballot Now Image Processor
<b>BNPP</b>	Ballot Now Post Processor
<b>BRAVO</b>	Ballot, Registration, and Absentee Voter Operations
<b>COTS</b>	Commercial Off-the-Shelf
<b>CRC</b>	Cyclic Redundancy Check
<b>CVR</b>	Cast Vote Record
<b>DAU</b>	Disabled Access Unit
<b>DC</b>	Direct Current
<b>DRE</b>	Direct Recording Electronic
<b>DTS</b>	Declined To State
<b>EAC</b>	Election Assistance Commission (under HAVA)
<b>eCM</b>	eSlate Cryptographic Module
<b>eCM PIN</b>	eSlate Cryptographic Module Personal Identification Number (PIN)
<b>EDX</b>	Election Data eXchange
<b>EMS</b>	Election Management System
<b>EPROM</b>	Erasable Programmable Read-Only Memory
<b>FCA</b>	Functional Configuration Audit
<b>FEC</b>	Federal Election Commission

<b>FIPS</b>	Federal Information Processing Standards
<b>FPCA</b>	Federal Post Card Application
<b>FVAP</b>	Federal Voting Assistance Program
<b>GUID</b>	Globally Unique Identification Number
<b>HAVA</b>	Help America Vote Act
<b>ID</b>	Identification
<b>IDE</b>	Integrated Drive Electronics
<b>IEEE</b>	Institute of Electrical and Electronic Engineers
<b>ISO</b>	International Standardization Organization
<b>ITA</b>	Independent Test Authority
<b>JBC</b>	Judge's Booth Controller
<b>LAT</b>	Logic and Accuracy Test
<b>MBB</b>	Mobile Ballot Box
<b>MTBF</b>	Mean Time Between Failure
<b>NASED</b>	National Association of State Election Directors
<b>NVLAP</b>	National Voluntary Laboratory Accreditation Program
<b>PC</b>	Personal Computer
<b>PCA</b>	Physical Configuration Audit
<b>PCB</b>	Printed Circuit Board
<b>PCMCIA</b>	Personal Computer Memory Card International Association
<b>PIN</b>	Personal Identification Number
<b>PUB</b>	Public (on JBC, eSlate, and eScan display screen)
<b>PVT</b>	Private (on JBC, eSlate, and eScan display screen)
<b>RNG</b>	Random Number Generator, Random Number Generation
<b>ROM</b>	Read-Only Memory

<b>RSA</b>	Rivest Shamir Adleman
<b>SERVO</b>	System for Election Records and Verification of Operations
<b>SSL</b>	Secure Sockets Layer
<b>TRANS</b>	Translation, Recording, and Audio Normalization System
<b>UOCAVA</b>	Uniformed and Overseas Citizens Absentee Voting Act
<b>USB</b>	Universal Serial Bus
<b>VBO</b>	Verified Ballot Option
<b>VR</b>	Voter Registration
<b>VSS</b>	Voting Systems Standards
<b>VVPAT</b>	Voter-Verified Paper Audit Trail
<b>XLIFF</b>	XML Localization Interchange File Format
<b>XML</b>	eXtensible Markup Language

## Terminology

**Note:** “EAC DEF – ” at the beginning of a definition paragraph indicates a definition from the draft copy of the Election Assistance Commission’s Voting Systems Standards of 2005, available from: <http://www.eac.gov/>.

**abandoned ballot** A ballot that the voter did not cast into the ballot box before leaving the polling place.

In the eSlate System, this is a ballot that the voter did not cast by pressing the CAST BALLOT button and the voter is not present.

Local election rules dictate dispensation of an abandoned ballot.

**Absentee** The CVR source for ballots voted prior to Election Day.

**absentee ballot** EAC DEF – Ballot prepared or designed for an absentee voter. Definition of an absentee ballot is jurisdiction dependent.

In the Hart Voting System, a paper ballot, although paper ballots can also be used for an entire election.

**acceptance testing** EAC DEF – Examination of a voting system and its components by the purchasing election authority (usually in a simulated-use environment) to validate performance of delivered units in accordance with procurement requirements, and to validate that the delivered system is, in fact, the certified or qualified system purchased.

**access code** The four-digit number given to each voter that indicates to the eSlate system which precinct and ballot style to display to the voter on the eSlate voting unit.

**Access Code Status Report** A JBC report that is printed on-demand. It lists the number of access codes issued, voted, expired, and canceled.

<b>Access Code Summary</b>	<p>A JBC report that is printed with the JBC Tally report after the polls are closed on Election Day. It lists the number of access codes issued, voted, expired, and canceled.</p> <p>A similar JBC report called Daily Summary is printed for the number of access codes issued, voted, expired, and canceled for the day at an Early Voting site when the polls are suspended for the day.</p> <p>A similar JBC report called Cumulative Summary is printed for the number of access codes issued, voted, expired, and canceled for all days at an Early Voting site when the polls are suspended for the day.</p>
<b>Access Code ticket, Access Code Report</b>	<p>The tape printed by the JBC to give a voter an access code. The Access Code ticket can be printed after the pollworker selects the precinct in which the voter is registered. The ticket contains the four-digit access code, timestamp, polling place name, and precinct name.</p>
<b>accessible voting booth</b>	<p>See booth, accessible and accessible voting station.</p>
<b>accessible voting station (Acc-VS)</b>	<p>EAC DEF – Voting Station equipped for individuals with disabilities referred to in HAVA 301 (a) (3) (B).</p>
<b>ADA</b>	<p>Americans with Disabilities Act. A 1990 Federal act, Public Law 101–336, 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. For more information, see <a href="http://www.usdoj.gov/crt/ada">http://www.usdoj.gov/crt/ada</a>.</p>
<b>administrator</b>	<p>A software application user with all permissions.</p>
<b>affiliated voter</b>	<p>Registered voter who has declared a political party preference for voting in primary elections.</p>

<b>alternative formats</b>	<p>EAC DEF – In the context of voting systems, the ballot or accompanying information is said to be in an alternative format if it is in a representation other than the written English normally displayed to non-disabled English-literate voters.</p> <p><b>Note:</b> The usual purpose of these formats is to provide accessibility to voters with disabilities or those with limited English proficiency. Examples include, but are not limited to, Braille, ASCII text, large print, recorded audio, and electronic formats that comply with Part 1194 of the standards for Section 508 of the Rehabilitation Act Amendments. Association.</p>
<b>ASCII file</b>	<p>American Standard Code for Information Interchange file. Electronic files whose formatting allows them to be easily transferred between different software applications and computers. Also called “text” files.</p>
<b>ATA</b>	<p>Advanced Technology Attachment. ANSI group X3T10’s official name for a disk drive IDE implementation that integrates the controller on the disk drive itself.</p>
<b>Audio Card</b>	<p>A PC-card that contains the audio prompt recordings for an Election and that can be used in a DAU eSlate.</p>
<b>Audio Card slot</b>	<p>The PC card drive in a DAU eSlate, or Demonstration eSlate.</p>
<b>audit log, audit trail</b>	<p>EAC DEF – Recorded information that allows election officials to view the steps that occurred on the equipment included in an election to verify or reconstruct the steps followed without compromising the ballot or voter secrecy.</p>
<b>audio prompt</b>	<p>The text for what the user will hear when listening to audio on the eSlate voting unit.</p>
<b>audio-tactile interface (ATI)</b>	<p>EAC DEF – Voter interface designed so as not to require visual reading of a ballot. Audio is used to convey information to the voter and sensitive tactile controls allow the voter to convey information to the voting system.</p>

<b>authentication</b>	The process of verifying that the entity or system process is a trusted entity or system process.
<b>authenticator ballot</b>	The system process requiring authentication. A ballot style as presented to a voter.
<b>ballot box, eScan</b>	A secure receptacle for the eScan that collects scanned paper ballots and that has an emergency compartment for temporary storage of voted ballots in case the eScan is disabled.
<b>ballot box security seal</b>	The wire or adhesive seal attached to the MBB door in a JBC or eScan to secure the installed MBB. The wire attached to the lid/receptacle junction of the eScan ballot box.
<b>ballot code</b>	A unique six-digit number assigned to a provisional ballot and to Early Voting retrievable ballots to enable swift retrieval of that ballot from the eSlate system by election officials. The ballot code is printed on the Provisional Ballot Stub for a provisional ballot, and on the Access Code ticket and the Retrievable Ballot Stub for an Early Voting retrievable ballot.
<b>ballot configuration</b>	EAC DEF – Particular set of contests to appear on the ballot for a particular election district, their order, the list of ballot positions for each contest, and the binding of candidate names to ballot positions.
<b>ballot counter</b>	EAC DEF – A counter in a voting device that counts the ballots cast in a single election or election test. Previously known as public counter.  A counter, reset to zero for each election, whose value increments every time a CVR is written to an MBB or other eSlate device.
<b>ballot format</b>	EAC DEF – One of any number of specific ballot configurations issued to the appropriate precinct. At a minimum, ballot formats differ from one another in content. They may also differ in size of type, graphical presentation, language used, or method of presentation (e.g., visual or audio). Also referred to as ballot style.

	<p>The arrangement of the ballot created in BOSS. Ballots may be formatted for the eSlate System, eScan System, or for Ballot Now.</p> <p>See also ballot style.</p>
<b>ballot formats</b>	The collection of ballot styles generated by BOSS from the data in an Election database.
<b>ballot header text</b>	Text defined in BOSS that will be included on the top line of the ballot.
<b>ballot identifier</b>	A barcode printed on the paper ballot that indicates the precinct number, party, language, and page number of the ballot.
<b>ballot image</b>	EAC DEF – An electronically produced record of all votes cast by a single voter. (Also referred to as “ballot set”).
<b>ballot instructions</b>	<p>EAC DEF – Instructional text that appears on the ballot.</p> <p>Ballot Instructions is a type of contest in BOSS for instructional text that appears at the top of the ballot and in audio prompts. There are three separate types of ballot instructions: (1) eSlate, (2) eSlate Audio Prompt, and (3) Ballot Now.</p> <p>There can be only one Ballot Instructions type of contest.</p> <p>The Ballot Instructions type of contest is a non-votable contest.</p>
<b>Ballot Key</b>	The unique identifier associated with a CVR cast with VBO in an Election.
<b>ballot measure</b>	EAC DEF – Laws and/or amendments to state constitutions that appear on the ballot for approval or rejection.
<b>Ballot Now</b>	The Hart InterCivic software application that prints an Election’s paper ballots on demand. The voted ballots can be digitally imaged by Ballot Now or an eScan to extract the cast vote records (CVRs) for delivery to the Tally application.

<b>Ballot Now Image Processor</b>	BNIP. The Hart InterCivic software utility that processes the ballot images scanned by Ballot Now.
<b>Ballot Now Post Processor</b>	BNPP. The Hart InterCivic software utilities that monitor paper ballots from Ballot Now for duplicate serial numbers.
<b>Ballot Origination Software System</b>	See BOSS.
<b>ballot position</b>	EAC DEF – Abstract choice that is represented by a single line item where a vote may be recorded in a ballot or ballot image.
<b>ballot preparation</b>	EAC DEF – Selecting the specific contests and questions to be contained in a ballot format and related instructions; preparing and testing election-specific software containing these selections; producing all possible ballot formats; and validating the correctness of ballot materials and software containing these selections for an upcoming election.
<b>ballot production</b>	EAC DEF – The process of converting the ballot format to a media ready for use in the physical ballot production or electronic presentation.
<b>ballot rotation</b>	EAC DEF – Process of varying the order of the candidate names within a given contest. See also rotation.
<b>ballot scanner</b>	EAC DEF – Device used to read the data from a paper ballot or ballot card.  In the Hart Voting System, the Ballot Now scanner that creates ballot images from paper ballots.  In the eScan System, the precinct-based scanner that creates ballot images from paper ballots.
<b>ballot style</b>	EAC DEF – See ballot format.  The information that makes up a specific precinct's election ballot, including all the possible contests and choices in each contest available to be voted on at the precinct. If the election type is a primary, the ballot

style may be further restricted to members of a certain party.

A ballot with a unique collection of contests to be used in the election. 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. The ballot style information is carried on the MBB. A ballot style barcode is printed on the ballot.

The specific ballot created by precinct and/or district assignments to contests. A unique combination of contests and candidates.

Variations of presentation of candidates or options (rotation) on a ballot do not constitute separate ballot styles since the ballot's set of contests has not changed.

**Ballot Text**

Instructional text embedded in the ballot. Ballot text is usually used to identify a section of the ballot.

Ballot Text is a type of contest in BOSS and is a non-votable contest type.

**blanket primary**

A type of primary election in which candidates for all political parties are listed on one ballot. In this type of primary, any voter can vote for any candidate for office, regardless of the candidate's political party affiliation.

**BNIP**

See Ballot Now Image Processor.

**booth**

A Hart InterCivic booth that may contain an eSlate, DAU eSlate, or Demo eSlate, and that collapses into its own carrying case.

**booth, accessible**

A Hart InterCivic booth for wheel-chair access to an eSlate, DAU eSlate, or Demo eSlate. The accessible booth collapses into its own carrying case.

**booth caddy**

A storage and moving unit that holds up to eight collapsed Hart InterCivic booths.

<b>booth, voting</b>	A Hart InterCivic booth that contains an eSlate, DAU eSlate, or Demo eSlate, and can contain a VBO printer.
<b>BOSS</b>	Ballot Origination Software System. The Hart InterCivic software application that creates a BOSS Election database for an election that uses the Hart Voting System.  The application from Hart InterCivic that constructs and formats ballot styles.
<b>BOSS audio manifest</b>	In TRANS, an XML file and corresponding folder containing WAV files used by BOSS for the import and export of election audio.
<b>caddy</b>	See booth caddy.
<b>candidate</b>	EAC DEF – Person contending in a race for office. A candidate may be explicitly presented as one of the choices on the ballot or may be a write-in candidate.
<b>candidate register</b>	EAC DEF – The record that reflects the total votes cast for the candidate. This record is augmented as each ballot is cast on a DRE or as digital signals from the conversion of voted paper ballots are logically interpreted and recorded.
<b>canvass</b>	EAC DEF – (1) Compilation of election returns and validation of the outcome that form the basis of the official results by political subdivision.  (2) Compilation of election returns for validation and approval by the political subdivision of the outcome, which form the basis for the official results.
<b>card reader</b>	A disk drive for reading from and writing to an ATA card.
<b>cast ballot</b>	EAC DEF – Ballot that has been submitted by the voter to election officials for tabulation.  The complete set of all cast votes made by the voter.
<b>cast vote</b>	The set of all contest options selected by the voter on a single contest on the ballot, including any associated write-in information.

<b>cast vote record</b>	See CVR.
<b>certification testing</b>	EAC DEF – Testing performed under either national or state certification processes to verify voting system conformance to requirements.
<b>certified write-ins</b>	A list of candidates that have been certified by the Election Authority as being valid write-in candidates for the election.
<b>challenged ballot</b>	EAC DEF – Ballot provided to individuals whose eligibility to vote has been questioned. Once voted, such ballots must be kept separate from other last ballots and are not included in the tabulation until after the voter’s eligibility is confirmed. See also provisional ballot.
<b>client</b>	In Ballot Now, the computer installed to run Ballot Now that is connected to a Ballot Now server via a network to allow multiple resolve sessions concurrently.
<b>closed primary</b>	<p>EAC DEF – Primary election in which voters receive a ballot listing only those candidates running for office in the political party with which the voters are affiliated, along with nonpartisan offices and ballot issues presented at the same election.</p> <p>A primary election that requires a voter to declare affiliation with a political party and that has separate ballot styles for each political party.</p> <p>A primary election in which only voters who are members of the participating parties may vote among choices in their party.</p>
<b>commercial off-the-shelf (COTS)</b>	EAC DEF – Commercial, readily available hardware devices (which may be electrical, electronic, mechanical, etc.; such as card readers, printers, or personal computers) or software products (such as operating systems, programming language compilers, database management systems, subsystems, components; software, etc.).
<b>conditional contest</b>	See dependent contest.

<b>configuration identification</b>	EAC DEF – An element of configuration management, consisting of selecting the configuration items for a system and recording their functional and physical characteristics in technical documentation. (Patterned after IEEE Std. 610.12–1990.)
<b>Congressional District</b>	A geographical division within a state in the United States that elects one member to the U.S. House of Representatives. U.S. Congressional Districts are based on population. The U.S. has 435 Congressional Districts.
<b>contest</b>	<p>EAC DEF – Each separate race for office or a referendum, proposition or questions a ballot. A single ballot may contain one or more contests.</p> <p>Generic term for a choice to be made on a ballot, including choices for candidates or choices for issues. Also known as race, office, proposition, issue, referendum, measure, and question.</p> <p>In the Hart Voting System, votable contests are: Straight Party, Office, and Proposition. Non-votable contests that place text on a ballot are: Instruction Text and Ballot Text.</p>
<b>contest dependency</b>	A dependency between contests based on either any selection or a particular selection made in a different contest. Dependency type, either by contest or by option, is determined in BOSS by BOSS's rules for the state in which the election is being performed.
<b>contest, dependent</b>	<p>Dependent contests, Recall Issues With Options, or Conditional Contests.</p> <p>On the eSlate, a contest that is enabled so that it can be voted upon only if a contest option is selected in its parent contest. In some states, the dependency may require that a particular contest option must be selected in its parent contest.</p> <p>On a Ballot Now paper ballot, a contest whose vote is recorded when the appropriate selection has been made in its parent contest.</p>

<b>contest option</b>	One of multiple choices that can be selected for a contest on a ballot.
<b>contest, non-partisan</b>	Questions or offices that are not restricted to voting by party affiliation; all voters may vote.
<b>contest type</b>	<p>The type of contest, corresponding to the voting pattern—may be Vote for One, Vote for N of M, Exact Vote for N of M, etc.</p> <p>The Straight Party contest type has a Vote for One voting pattern.</p> <p>A Contest contest type can have a Vote for One, Vote for N of M, or Exact Vote for N of M voting pattern where Vote For N of M contests where <math>N &gt; 1</math>.</p> <p>A Proposition contest type can have a Vote for One or Vote for N of M voting pattern.</p> <p>Vote For One—allow only one choice to be made for a contest; this is really a special case of Vote For N of M where <math>N = 1</math>.</p> <p>Vote For N of M—allow up to N choices to be made for a contest.</p>
<b>COTS</b>	See Commercial Off-the-Shelf.
<b>counted ballot</b>	EAC DEF – Ballot that has been tabulated and whose votes are included in the candidate and measures vote totals.
<b>CRC</b>	Cyclic Redundancy Check. A continuous test of each transfer of data within a system to insure that the data received at the end of the transfer are the same as the data originated by the source.
<b>credentials</b>	Authentication information that enables access to operations in the system or associated databases. Credentials typically include user IDs and passwords.
<b>cross filing</b>	See cross-party endorsement.

<b>cross-party endorsement</b>	<p>EAC DEF – 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. Also referred to as cross filing.</p> <p>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. State requirements vary for how votes are recorded when a voter selects the same candidate or slate more than once. Also referred to as “cross filing.”</p>
<b>cryptographic key</b>	<p>EAC DEF – Value used to control cryptographic operations, such as decryption, encryption, signature generation or signature verification.</p>
<b>cryptographic module, crypto module</b>	<p>See eSlate Cryptographic Module (eCM).</p>
<b>cryptography</b>	<p>EAC DEF – Discipline that embodies the principles, means, and methods for the transformation of data in order to hide their semantic content, prevent their unauthorized use, or prevent their undetected modification.</p>
<b>Cumulative (Access Code) Summary</b>	<p>A summary on the JBC “Suspend Report” or “Daily Detail Report” that lists the access codes issued, voted, expired, and canceled for the entire session of Early Voting.</p>
<b>cumulative voting</b>	<p>EAC DEF – Practice where voters are permitted to cast as many votes as there are offices to be filled. Voters are not limited to giving only one vote to a candidate. Instead, they can put multiple votes on one or more candidates.</p> <p>The options in an office contest are replicated as many times as the number of valid choices. This functionality exists to support “Vote N of M” style voting.</p>

eSlate – In a Vote For N of M contest, allow the voter to cast multiple votes for a single candidate, or distribute a single vote each to multiple candidates, or any combination of these two options where the total number of votes cast in the contest is equal to N.

**CVR**

EAC DEF – Cast Vote Record. Permanent record of all votes produced by a single voter whether in electronic or paper copy form. Used for counting votes. Also referred to as ballot set or ballot image when used to refer to electronic ballots.

An electronic version of a voted ballot cast in an electronic voting system that contains the information on how contests were voted.

In Ballot Now, contains information on how contests were voted, including any resolutions that were needed during the resolve process.

In an eScan, contains information on how contests were voted.

**curbside voting**

The ability to take the last eSlate in the network connected to a JBC in a polling place off of the network so it can be used by a disabled voter outside the polling place.

To use an eSlate curbside:

- The eSlate must have batteries.
- The poll worker issues an Access Code and enters it at the last eSlate in the network.
- When the ballot appears, the eSlate is disconnected from the network and transported to the voter's location.
- The voter votes and presses the CAST BALLOT button.
- The poll worker returns the eSlate to the polling place and re-connects it to the network.
- The voter's ballot is recorded.

**Cyclic Redundancy Check** See CRC.

<b>Daily Detail Report</b>	A report that the JBC or eScan prints when the polls at an Early Voting site are suspended.
<b>daisy chain</b>	Items connected in a series. At a polling place using the eSlate voting system, up to 12 eSlate voting units are daisy-chained, one to another, with one of the end voting units connected to the Judge's Booth Controller.
<b>data accuracy</b>	<p>EAC DEF – (1) Data accuracy is defined in terms of ballot position error rate. This rate applies to the voting functions and supporting equipment that capture, record, store, consolidate and report the specific selections, and absence of selections, made by the voter for each ballot position.</p> <p>(2) The system's ability to process voting data absent internal errors generated by the system. It is distinguished from data integrity, which encompasses errors introduced by an outside source.</p>
<b>database</b>	A file of records. Each record contains fields and operations for performing functions.
<b>database configuration file</b>	Every database in the Hart Voting System has an associated configuration file. This database configuration file contains the database login credentials.
<b>database user</b>	The owner of the database and/or tables therein. Familiar examples of the database user are "dba" and "dbo."
<b>data integrity</b>	EAC DEF – The invulnerability of the system to accidental intervention or deliberate, fraudulent manipulation that would result in errors in the processing of data. It is distinguished from data accuracy that encompasses internal, system-generated errors.

<b>DAU eSlate, DAU</b>	Disabled Access Unit. A Hart InterCivic eSlate voting unit consisting of an eSlate voting unit with additional hardware capable of accepting input from tactile input (jelly) switches or a sip-and-puff device, of reading an Audio Card, and of playing audio files through a speaker.
<b>decryption</b>	EAC DEF – Process of changing ciphertext (i.e., encrypted text) into plaintext.
<b>Demo Card</b>	See MBB, Demo.
<b>Demonstration eSlate</b>	A Hart InterCivic Disabled Access Unit voting unit consisting of a DAU eSlate voting unit that has firmware for displaying a Demo Card’s ballot after entry of any Access Code. The Demonstration eSlates does not record CVRs on Demo Card.
<b>device audit log</b>	A record of activities that have taken place in a JBC, eSlate, or eScan. The device audit log is accessible through SERVO.
<b>digital signature</b>	<p>EAC DEF – 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 authentication and integrity protection.</p> <p>A digital signature provides a means of protecting the authenticity and integrity of an electronic document. For example, when an application is deployed, a digital signature can be used to verify that the software is genuine, authentic, and unaltered Hart InterCivic software. Digital signatures are normally implemented using cryptographic techniques based upon asymmetric encryption, and it is common to create a digital signature using a private key.</p>
<b>directly verified</b>	EAC DEF – Voting system that allows the voter to verify at least one representation of his or her ballot with his/her own senses, not using any software or hardware intermediary. Examples of a directly verified voting system include DRE with a voter verified paper trail or marksense system. This is in contrast with an indirectly verified voting system.

	Implemented in the Hart Voting System with the VBO.
<b>district</b>	A selection of precincts and/or split precincts that determine a voting group.
<b>DRE voting system</b>	Direct Recording Electronic. EAC DEF – A voting system that records votes by means of a ballot display provided with mechanical or electro-optical components that can be actuated by the voter; that processes the data by means of a computer program; and that records voting data and cast vote records in internal and/or external memory components. It produces a tabulation of the voting data stored in a removable memory component and in printed copy.
<b>DRE-VVPAT</b>	EAC DEF – DRE voting system containing Voter Verified Paper Audit Trail capability. See also voter verified paper audit trail.
<b>DTS</b>	Declined To State. In California, the adjective that describes a voter who did not declare affiliation with a political party when they registered to vote.
<b>duplex</b>	In Ballot Now, ballots are printed and scanned on both sides of the ballot page.
<b>EAC</b>	EAC DEF – Election Assistance Commission ( <a href="http://www.eac.gov">http://www.eac.gov</a> ).
<b>Early Voting</b>	EAC DEF – Voter completes the ballot in person at a county office or other designated polling site prior to Election Day. Also known as Early In-Person Voting or on-site absentee voting.
<b>Early Voting retrievable ballots</b>	Ballots cast in the eSlate System equipment at an Early Voting polling place that can be retrieved by ballot code in the Hart Election Management System software applications by election officials. The ballot code is printed on the Access Code ticket and the Retrievable Ballot Stub for an Early Voting retrievable ballot. A setting in BOSS specifies that eSlate System ballots cast during Early Voting will be retrievable.
<b>eCM Manager</b>	The Hart InterCivic software application that manages secret keys and PINs for the eSlate Cryptographic Module (eCM).

<b>eCM PIN</b>	<p>eSlate Cryptographic Module Personal Identification Number.</p> <p>A passphrase selected by the jurisdiction system administrator before any signing keys are generated. This PIN is used when the signing key is written to and read from the eSlate Cryptographic Module (eCM).</p>
<b>EDX</b>	<p>Election Data eXchange.</p> <p>A Hart InterCivic public XML standard for exchange of critical information required to effectively manage elections, including cast vote data, election management data, and ballot definition data.</p>
<b>EDX file</b>	<p>In Hart Voting System software applications, the XML file that contains the schema that provides a common communication interface between all of the steps in the election process.</p>
<b>election</b>	<p>A poll of constituents to determine who will hold office and/or which issues will become law.</p>
<b>Election Assistance Commission</b>	<p>EAC (<a href="http://www.eac.gov">http://www.eac.gov</a>).</p>
<b>Election ballot</b>	<p>In Ballot Now, a bona fide Election ballot that will be given to a voter. Election ballots can contain a serial number bar code to prevent more than one copy of them being counted.</p>
<b>election database</b>	<p>EAC DEF – A data file or set of files that contains geographic information about political subdivisions and boundaries; all contests and questions to be included in an election; and the candidates for each contest.</p>
<b>Election Day</b>	<p>The CVR source of ballots voted on the day designated for the election. Election day voting usually occurs at a polling place.</p>
<b>election definition</b>	<p>EAC DEF – Definition of the races and questions that will appear on the ballot for a specific election.</p>

<b>election district</b>	EAC DEF –Geographic area represented by a public official who is elected by voter residing within the district boundaries. The district may cover an entire state or political subdivision, may be a portion of the state or political subdivision, or may include portions of more than one political subdivision.
<b>Election ID</b>	An election identification code that is unique for every election.  Election ID, Long – Used internally by the software application.  Election ID, Short – A three-character Election ID code in a barcode on the paper ballots printed by Ballot Now.
<b>Election Identification Report</b>	A report that the JBC or eScan prints when the polling place ID is selected. The report contains the current date and time, jurisdiction name, election name, election date, polling place, and for Early voting, shows the number of precincts enabled for the polling place; for Election Day voting, shows the name of all precincts enabled for the polling place.
<b>election management system (EMS)</b>	EAC DEF – 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.
<b>Election MBB</b>	An MBB used to print ballots in Ballot Now and display ballots in the eSlate System for election voting and to record election results for reading into the Tally application.
<b>Election Solutions Group</b>	The elections division of Hart InterCivic.
<b>election type</b>	The kind of election (primary, general election, etc.), which indicates the type of ballot being used for an election. Indicates whether party affiliation affects which ballot is displayed to the voter, and to some extent the range of voting patterns possible.

<b>encryption</b>	<p>EAC DEF – Process of obscuring information (i.e., changing plain text into ciphertext) for the purpose of security or privacy. See also cryptographic key, decryption.</p> <p>A process of translating a message, called the plaintext, into an encoded message, called the ciphertext. This is usually accomplished using a secret key and a cryptographic cipher.</p>
<b>encryption, symmetric</b>	Where a single secret key is used for both encryption and decryption. Symmetric-key algorithms can be divided into stream ciphers and block ciphers. Stream ciphers encrypt the bits of the message one at a time, and block ciphers take a number of bits and encrypt them as a single unit. Examples of block ciphers are DES, AES, and Blowfish. Probably the best known stream cipher is RC4.
<b>encryption, asymmetric</b>	Where a pair of keys is used: one for encryption and the other for decryption. One example of asymmetric encryption is RSA Public/Private key encryption.
<b>ENTER button</b>	The button on an eSlate used to select a ballot item on a ballot page that has focus on the eSlate screen or to select a number or a button that has focus.
<b>eScan</b>	A self-contained voting terminal that scans, decodes, and tabulates results from hand-fed election or absentee paper ballots that were printed by Hart InterCivic's Ballot Now software application.
<b>eScan Initialized Report</b>	A report printed from the eScan any time the system is powered on. Shows timestamp, software version and diagnostic test result. A self-diagnostic test is run on the system, and the result is indicated as "***PASS**" on the report.
<b>eScan Tally tape</b>	The tally an eScan can print when the pollworker selects Print Tally after the polls have been closed.
<b>eSlate</b>	The Hart InterCivic electronic voting input device that connects to the JBC and presents the ballot to the voting public without audio and accepts their selections.

<b>eSlate Cryptographic Module (eCM)</b>	The definition of Cryptographic Module is based upon the definition as given by the U.S. Department of Commerce, FIPS 140–2: “The set of hardware, software, and/or firmware that implements Approved security functions (including cryptographic algorithms and key generation) and is contained within the cryptographic boundary.”
<b>eSlate, DAU</b>	See DAU eSlate.
<b>eSlate, Demonstration</b>	See Demonstration eSlate.
<b>Event</b>	In SERVO, a specific backup of a set of devices in SERVO. An Election MBB is required to create an Event. Each Event relates directly to either an Election, a TEST Election, or a demonstration Election.
<b>External IDs</b>	In BOSS, the IDs of imported records.
<b>FCA</b>	EAC DEF – Functional Configuration Audit. An exhaustive verification of every system function and combination of functions cited in the vendors’ documentation. Through use, the FCA verifies the accuracy and completeness of the system’s Voter Manual, Operations Procedures, Maintenance Procedures, and diagnostic Testing Procedures.
<b>FEC</b>	An acronym for the Federal Election Commission, an independent federal regulatory agency established by Congress in 1974 to enforce campaign finance.
<b>Federal contest</b>	Lists candidates for federal office: President/Vice President, Senator, and Member of the U.S. House of Representatives.
<b>Federal Post Card Application</b>	See FPCA.
<b>finalized</b>	In BOSS, the database status after the election database has been locked to make it available to Tally.  In Tally, the database status that prevents further reading of votes from MBBs into Tally.

<b>firmware</b>	EAC DEF – Computer programs (software) stored in read-only memory (ROM) devices embedded in the system and not capable of being altered during system operation.
<b>flash memory</b>	Reprogrammable, read-only memory that is used in MBBs, JBCs, eSlates, and eScans. Flash memory does not require continuous electric power to operate. It is a system that can store more data and work faster than a traditional floppy disk.
<b>focus</b>	On an eSlate voting unit, the ballot item currently highlighted. The SELECT wheel is used to move the focus forward to the next item or backward to the previous item. The ENTER button is used to select the item that currently has focus.
<b>FPCA</b>	Federal Post Card Application. A simultaneous registration and absentee ballot request used by citizens voting pursuant to the Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA). The FPCA is available both electronically and via mail.
<b>functional test</b>	EAC DEF – A test performed to verify or validate the accomplishment of a function or a series of functions.
<b>FVAP</b>	Federal Voting Assistance Program. Administers the federal responsibilities of the U.S. Secretary of Defense under the Uniformed and Overseas Citizens Absentee Voting Act (UOCAVA) of 1986. UOCAVA covers more than six million potential voters. FVAP's goals are: 1) to inform and educate U.S. citizens worldwide of their right to vote, 2) to foster voting participation, and 3) to protect the integrity of and enhance the electoral process at the federal, state, and local levels.
<b>general election</b>	EAC DEF – Election in which voters, regardless of party affiliation, are permitted to select candidates to fill public office and vote on ballot issues.
<b>GUID</b>	Globally Unique Identification Number. The eCM's Key GUID.

<b>Hart Election Management System (Hart EMS)</b>	The software suite for the Hart Voting System. Includes BOSS, Tally, Ballot Now, Rally, SERVO, TRANS.
<b>Hart Voting System (HVS)</b>	A completely integrated electronic and paper ballot voting system that supports Early, Election Day, and Absentee voting.
<b>hash</b>	EAC DEF – Algorithm that maps a bit string of arbitrary length to a fixed-length bit string. Approved hash functions satisfy the following properties: (a) it is computationally infeasible to find any input that maps to any prespecified output, and (b) it is computationally infeasible to find any two distinct inputs that map to the same output.
<b>HAVA</b>	EAC DEF – Help America Vote Act of 2002 codified at 42U.S.C. GIS301–15545.
<b>Independent Testing Authority (ITA)</b>	EAC DEF – Deprecated, replaced by Voting System Testing Laboratory. Prior usage referred to independent testing organizations certified by the National Association of State Election Directors (NASSED) to perform voting system qualification testing.
<b>JBC</b>	Judge’s Booth Controller. The eSlate System console device for controlling up to 12 eSlate/DAU voting devices. The JBC requires an Election MBB when it is used to generate access codes for the voters.
<b>JBC Initialized Report</b>	A report printed from the JBC any time the system is powered on. Shows timestamp, software version and diagnostic test result. A self-diagnostic test is run on the system, and the result is indicated as “**PASS**” on the report.
<b>JBC Tally tape</b>	The tally a JBC can print when the pollworker selects Print Tally after the polls have been closed.
<b>Jobs folder</b>	In TRANS, the desktop folder created during installation of TRANS that contains XLIFF and/or audio manifest files (XML, WAV) that can be loaded into TRANS when TRANS is opened.

<b>Judge's Booth Controller</b>	See JBC.
<b>jurisdiction</b>	A precinct or group of precincts managed by a single organization.
<b>Key GUID</b>	See GUID.
<b>Key ID</b>	An identification number for an eCM.
<b>Key, Election</b>	See Election Key.
<b>key management</b>	EAC DEF – Activities involving the handling of cryptographic keys and other related security parameters (e.g., passwords) during the entire life cycle of the keys, including their generation, storage, establishment, entry and output, and zeroization.
<b>laser printer</b>	See printer, laser.
<b>LAT, L&amp;A</b>	EAC DEF – Logic and Accuracy Test Testing of the tabulator setups of a new election definition to ensure that the content correctly reflects the election being held (i.e., contests, candidates, number to be elected, ballot styles, etc.) and that all voting positions can be voted for the maximum number of eligible candidates and that results are accurately tabulated and reported.
<b>limited federal ballots</b>	A ballot cast by a disqualified provisional voter for which Federal and State level contest votes cast by the provisional voter will be counted and for which no votes cast by the provisional voter in non-Federal or non-State level contests will be counted.
<b>line printer</b>	See printer, line.
<b>locked ballot</b>	In Ballot Now, the ballot is currently checked out in the resolve process for editing by a user.
<b>Logic and Accuracy Test</b>	See LAT.
<b>logical correctness</b>	EAC DEF – A condition signifying that, for a given input, a computer program will satisfy the program specification (produce the required output).

<b>master SERVO PC</b>	The SERVO computer that has an Event into which the device data backed-up into Events on other SERVO computers can be imported in order to create a consolidated Event that contains all the backup device data for an Election.
<b>MBB</b>	<p>Mobile Ballot Box. A PC Card (flash card) created by BOSS that stores ballot style information.</p> <p>The MBB is a memory card that carries all Election information to and from individual polling places.</p> <p>The JBC uses the MBB to send out ballot information to the eSlates and to record CVRs and audit logs. Voted MBBs are read into the Tally System directly or through Rally.</p> <p>The eScan uses the MBB to decode scanned paper ballots and to record CVRs and audit logs.</p> <p>Ballot Now uses an Election MBB to create a Ballot Now Election database. Ballot Now reads the MBB to determine the number of ballot styles and reads further information detailing the layout of the ballots. With this information, Ballot Now can print out paper ballots and scan paper ballots for contest results. Ballot Now saves the CVRs to an MBB and the MBB is then read by Tally to complete the Election.</p> <p>The eScan uses an MBB to record CVRs from scanned, voted paper ballots.</p>
<b>MBB card slot</b>	The PC card drive in a JBC, DAU eSlate, Demonstration eSlate, or eScan Console.
<b>MBB, closed</b>	In Ballot Now, an MBB with CVRs written and a flag set so that no more CVRs can be written to it.
<b>MBB, Demo</b>	An MBB that also contains audio files for the Election so that it can be used in the Demonstration eSlate.
<b>MBB, Election</b>	An MBB used to collect votes for an election.
<b>MBB ID</b>	A serial number present on the card. This serial number is referred to as the MBB ID.

	A serial number written to the MBB when it is first initialized by BOSS. This number is unique across all MBBs in an election.
	A 16-byte strong random number.
<b>MBB, open</b>	In Ballot Now, an MBB that has been used to open an election in Ballot Now and that may or may not have had some number of CVRs written to it.
<b>MBB, recount</b>	See recount MBB.
<b>MBB, recovered</b>	In Ballot Now, an MBB that has its CVRs transferred to another MBB. The recovered MBB is functionally a closed MBB.
<b>MBB, recovery</b>	See Recovery MBB.
<b>MBB, Test</b>	An MBB used for test purposes when validating the eSlate system before an election. The Test MBB can only contain information from Test ballots.
<b>MIL STD</b>	Military Standard. A set of standards for various products developed for use by the United States military.
<b>Mobile Ballot Box</b>	See MBB.
<b>modified closed primary</b>	In BOSS, an Election Type for a primary election in which each party has its own ballot style and ballot styles can be created for nonpartisan voters so they may either vote on solely non-partisan contests or may choose to vote on partisan contests approved by a political party as well as vote on non-partisan contests.
<b>MTBF</b>	Mean Time Between Failure. An indicator of the expected reliability of a system, usually expressed in hours, derived on a statistical basis from the known failure rates of various system hardware components.
<b>multi-seat contest</b>	EAC DEF – 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. Also known as field race.
<b>NASED</b>	EAC DEF – National Association of State Election Directors, ( <a href="http://www.nased.org">http://www.nased.org</a> )

<b>network</b>	Any serial or parallel channel that is used to transmit information. For example, RS-232, RS-485, USB, PC-parallel, modem, and IEEE 802.3 are all examples of system network connections.
<b>Network Configuration Report</b>	A report printed on the JBC after booths are assigned. The report contains the timestamp, number of booths configured, serial number and software version of JBC, serial numbers and software version of eSlates, PUB count and PVT count for the JBC and each eSlate unit.
<b>non-partisan office</b>	EAC DEF – An elected office for which candidates run independent of political party affiliation.
<b>nonvolatile memory</b>	EAC DEF – Memory in which information can be stored indefinitely with no power applied. Static RAM, ROMs and EPROMs are examples of nonvolatile memory.
<b>normalize gain</b>	In BOSS, amplifies the selected sample range to use the entire amplitude range for the sample.  In TRANS, when the amplitude of the waves in the audio file are normalized.
<b>NVLAP</b>	EAC DEF – The NIST National Voluntary Laboratory Accreditation Program.
<b>on-site absentee voting</b>	EAC DEF – See early voting.
<b>open primary</b>	EAC DEF – Primary election in which voters may vote, regardless of political affiliation. 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. Voters are also permitted to vote on nonpartisan offices and ballot issues that are presented at the same election.
<b>operator</b>	A user with reduced privileges for interacting with the eSlate system applications.

<b>overvote</b>	<p>EAC DEF – Voting for more than the maximum number of selections allowed in a race.</p> <p>eSlate – When a voter makes P selections in a Vote For N of M contest, where <math>P &gt; N</math>; eSlate will present an information screen with an explanation that the voter must de-select one of their options before they can select a different option.</p> <p>Ballot Now – When a voter makes more selections in a contest than allowed.</p>
<b>paper-based voting system</b>	EAC DEF – Voting system that records votes using one or more ballot cards or a written list of choices.
<b>paper record</b>	EAC DEF – Paper ballot image or summary that is a copy of the electronic record and that is verifiable by a voter. See also ballot image.
<b>partisan office</b>	EAC DEF – An elected office for which candidates run as representatives of a political party.
<b>party</b>	A political party. For example, Democrat and Republican.
<b>PC card</b>	A trademark of the Personal Computer Memory Card International Association (PCMCIA) that describes a removable piece of hardware about the size of a credit card that plugs into a PCMCIA slot and stores information in a way that is similar to the way a floppy disk stores information for a personal computer.
<b>PC card drive</b>	The computer's drive for reading and writing flash cards (PC cards) such as MBBs and Audio Cards.
<b>point size</b>	EAC DEF – Method of measuring type, where the size of a font is measured from the top of the tallest character to the bottom of the lowest character.
<b>political subdivision</b>	EAC DEF – 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.
<b>polling location</b>	EAC DEF – The physical address of a polling place.

<b>polling place</b>	<p>EAC DEF – Facility that is staffed by poll workers and equipped with voting equipment, to which voters assigned to that precinct come to cast in-person ballots.</p> <p>The location where voters physically go to vote. Often a single polling place supports several precincts.</p>
<b>Polls Opened Report</b>	Report printed by the JBC or eScan when the polls are opened. The timestamp includes month, day, year, hour, minutes, and seconds.
<b>pollworker</b>	The person who conducts an election in a polling place.
<b>precinct</b>	<p>EAC DEF – Administrative division representing a geographic area in which voters cast ballots at the same polling place. Voters casting absentee ballots may also be combined into one or more administrative absentee precincts for purposes of tabulating and reporting votes. Generally, voters in a polling place precinct are eligible to vote in a general election using the same ballot format. In some jurisdictions, however, the ballot formats may be different due to split precincts or required ballot rotations within the precinct.</p> <p>The smallest division into which an election jurisdiction may be divided.</p>
<b>Precinct Ballot Summary</b>	A JBC or eScan report that is printed with the Tally report after the polls are closed on Election Day. It lists for each precinct the total ballots cast, the total provisional ballots cast, and the number of provisional ballots included in the total for the total ballots cast. The provisional ballots cast through a JBC are included in the total ballots cast values based on the definition in the BOSS Jurisdiction tab's eSlate Options window.
<b>precinct count</b>	EAC DEF – Counting of ballots in the same precinct in which those ballots have been cast.

<b>primary election</b>	<p>EAC DEF – Election held to determine which candidate will represent a political party for a given office in the general election. Some states have an open primary, while others have a closed primary. Sometimes elections for nonpartisan offices and ballot issues are held during primary elections.</p> <p>See also closed primary, open primary, modified closed primary.</p>
<b>printer, eScan</b>	The printer in an eScan that prints to a 3 ¼" wide roll of thermal paper.
<b>printer, JBC</b>	The printer in a JBC that prints to a 3 ¼" wide roll of thermal paper.
<b>printer, laser</b>	A printer that prints one page at a time using laser technology.
<b>printer, line</b>	A printer that prints one line at a time, as opposed to a printer that prints a page at a time or a character at a time. In the Hart Voting System, the line printer prints to continuous 8 ½ x 11" paper.
<b>printer, VBO</b>	The printer in the VBO.
<b>private (PVT) counter</b>	<p>A counter, reset to zero at the manufacturer, whose value increments every time a CVR is written to an MBB or other eSlate system device. The private counter is read-only to the customer.</p> <p>On a JBC or an eSlate, the private counter appears in the lower-left corner of the screen to indicate the number of CVRs stored in the device since the device was put into use.</p> <p>A six-digit number, shown on a JBC or eScan "Network Configuration Report" and a JBC's Polls Open screen, and in the Ballot Now window that indicates how many votes have been counted on that machine in its lifetime.</p> <p>In SERVO, a reset operation on a device does not erase the private counter value in the device.</p>

<b>provisional ballot</b>	<p>EAC DEF – Ballot provided to individuals who claim they are registered and eligible to vote but whose eligibility or registration status cannot be confirmed when they present themselves to vote. Once voted, such ballots must be kept separate from other ballots and are not included in the tabulation until after the voter’s eligibility is confirmed. See also challenged ballot.</p> <p>A ballot cast in the eSlate System by a voter whose eligibility to vote was in question. A Provisional Ballot’s CVR carries a retrieval code so that it can be included or excluded in the tally after the voter’s eligibility has been verified.</p>
<b>Provisional Ballot Stub</b>	<p>See Voter Provisional Stub.</p>
<b>provisional voter</b>	<p>A voter whose eligibility is yet to be determined at a given polling place. A provisional voter is allowed to vote on a “provisional ballot” under conditions set by state election law. Because the voter is “provisional,” his/her ballot must be retrievable by election officials under certain conditions that vary from state to state. Also called “challenged voter.”</p>
<b>public (PUB) counter</b>	<p>See also ballot counter.</p> <p>In SERVO, the public counter appears in the lower-right corner of a JBC or eSlate screen and displays all zeroes when no CVRs are stored in the device. A reset operation on a device erases all CVRs in the device to achieve a zero public counter.</p> <p>A six-digit number, shown on a JBC or eScan “Network Configuration Report” and on a JBC’s Polls Open screen, and in the Ballot Now window that indicates how many votes have been counted on that machine for the current election.</p>
<b>race</b>	<p>EAC DEF – Contest between candidates.</p>

<b>Rally</b>	The Hart Voting System application that reads, stores, and transfers CVRs via local area network or modem connection to a computer running the Tally application.
<b>read ballot</b>	EAC DEF – Ballot that has been processed but may or may not be counted.
<b>record</b>	EAC DEF – (noun) Data that are preserved by a voting system, not necessarily in any particular form.  (verb) To preserve such data.
<b>recount</b>	EAC DEF – Retabulation of the votes cast in an election.
<b>recount MBB</b>	In SERVO, an MBB created from backup data created from JBCs, eSlates, or eScans.
<b>recovery MBB</b>	In SERVO, an MBB created to replace a lost or damaged MBB. The recovery MBB is created from the data backed up to an Event in the SERVO database from the device that contained the original MBB.
<b>referendum</b>	Method of submitting a legislative measure to voters for approval or rejection.
<b>registration</b>	The process whereby a prospective voter is required to establish identity and residence prior to an election in order to be declared eligible to vote.
<b>residual vote</b>	EAC DEF – Total number of votes that cannot be counted for a specific contest. There may be multiple reasons for residual votes (e.g., declining to vote for the contest, overvoting in a contest, failure to cast ballot before leaving polling place).
<b>Resolution Board user</b>	A Ballot Now user with privileges to resolve ballots.
<b>resolve</b>	In Ballot Now, the task of assigning the voter's intent to contests that contain undervotes, overvotes, or a write-in, or resolving a completely blank ballot or a damaged ballot.  In Tally, the task of assigning the voter's intent to votes on ballots that contain a write-in.

<b>retrieval code</b>	See ballot code.
<b>rolloff</b>	EAC DEF – Difference between number of votes cast for contests in the higher offices on the ballot and the number cast for contests that are lower on the ballot. It is sometimes referred to as voter fatigue.
<b>Rotary Select™ Navigation System</b>	See SELECT wheel.
<b>rotation</b>	<p>In the Hart Voting System, rotation of candidate or option list in a contest each time a ballot is presented to a voter. The following rotation schemes are available in BOSS:</p> <ul style="list-style-type: none"><li>• Equal Time Rotation (ETR) – Rotate the candidate or option list (dropping the first to the bottom) each time a ballot is issued to a voter.</li><li>• By Precinct – Rotate the candidate or options list so that the same ordering appears within a precinct, regardless of split.</li><li>• By Precinct Split – Rotate the candidate or options list by precinct split.</li><li>• California Rotation (specialized), for use in California only.</li></ul> <p>See also ballot rotation.</p>
<b>Sample ballot</b>	In Ballot Now, a ballot printed as a sample of the real Election ballot. Sample ballots contain a special bar code that prevents them from being included as a CVR in an MBB.
<b>scan batch</b>	In Ballot Now, a group of ballot pages to be scanned. Each scan batch has a certain number of pages, defined by the operator when the scan batch is defined, a system-assigned sequence number, and optionally, a user-defined description.
<b>SELECT wheel</b>	The rotary wheel (dial) on each eSlate voting device that allows a voter to navigate (to move the focus) through the ballot and highlight choices. Also called “Rotary Select™ Navigation System.”

<b>serial number</b>	<p>In Ballot Now, a bar code number placed on the ballot stub and/or the ballot that uniquely identifies the ballot.</p> <p>In Hart Voting System equipment, a unique identifier for an MBB, an eSlate, a JBC or an eScan.</p> <p>In the eCM, the unique text stored in the module by the module manufacturer.</p>
<b>server</b>	In Ballot Now, the computer installed to house the Ballot Now Election database and write its CVRs to an Election MBB.
<b>SERVO</b>	The Hart InterCivic System for Election Records and Verification of Operations software application, which is an election records and recount management system for the eSlate System and the eScan System.
<b>signing key</b>	The system security authentication model is based upon a signing key (a 32 byte random value). A new signing key may be generated as often as once per election and then loaded into the system components. Desktop systems save the signing key in a portable cryptographic module.
<b>signing key ID</b>	An identifier, separate from the signing key, stored in the cryptographic module that disallows further processing of an MBB if the signing key identifier fails validation.
<b>sip-and-puff device</b>	A device that can be attached to a DAU eSlate to enable navigation by breath control.
<b>special election</b>	An election conducted outside of the normal election cycle, most often for the purposes of deciding funding issues and filling vacancies in offices.
<b>split precinct</b>	<p>EAC DEF – A split precinct is a precinct containing more than one ballot format in order to accommodate a contiguous geographic area served by the precinct that contains more than one election district.</p> <p>The smallest division of a precinct for election purposes.</p>

<b>spoiled ballot</b>	<p>EAC DEF – Ballot that has been voted but will not be cast.</p> <p>A ballot that has been rendered invalid by a voter who is still present at the polling place, making it necessary to give the voter a new ballot. With the eSlate system, a ballot is spoiled by canceling the booth before the CAST BALLOT button has been pressed. The pollworker may cancel a booth and issue a new Access Code to a voter if their initial Access Code presented the wrong ballot style (precinct) or the wrong language, or the ballot is not on the DAU eSlate but needs to be.</p>
<b>SSL</b>	<p>Secure Sockets Layer. An open standard protocol developed by Netscape Communications for transmitting data on a secure communications channel in a network by using a private key to encrypt the data that is being transferred over the SSL connection. The “sockets” refers to the sockets methods of passing data between a server program and a client in a network or between a program’s layers on the same computer.</p> <p>SSL allows an SSL-enabled server to authenticate itself to an SSL-enabled client and vice versa, and allows establishment of an encrypted connection between both computers.</p>
<b>straight party voting</b>	<p>EAC DEF–When voters are permitted a vote for all candidates on the ballot from a single political party in contests linked to straight party voting by making only a single selection.</p>
<b>Suspend Report</b>	<p>A JBC or eScan report that automatically prints when polls are suspended in Early Voting. For a JBC, the report lists the PUB count and PVT count of the JBC and eSlate units, a Daily (ACCESS CODE) Summary, and a Cumulative (ACCESS CODE) Summary.</p>
<b>System IDs</b>	<p>In BOSS, keys for the data elements in the Election database.</p> <p>See also External IDs.</p>

<b>tabulation</b>	EAC DEF – See count.
<b>tabulator</b>	EAC DEF – Device that counts votes.
<b>tactile input switches</b>	Large buttons (one red, one green) that can be connected to the DAU eSlate and used instead of the SELECT wheel and the ENTER button.
<b>Tally</b>	The Hart InterCivic tabulation software application.
<b>Tally Report</b>	A report that is printed at the JBC or eScan when polls are closed on election day. For a JBC, it includes the date, time, precinct, a tally of votes for each contest, and an ACCESS CODE Summary.
<b>Test ballot</b>	In Ballot Now, a ballot printed to test the system before an Election. A Test ballot can only be printed from a Test MBB.
<b>Test Mode</b>	An unofficial setup of MBBs, Ballot Now, eSlate System equipment, eScan System equipment, and Tally used for testing. BOSS allows you to create “Test MBBs” which are identical in every aspect except all data generated from the use of the test MBB is labeled as “TEST.” All printouts from a JBC or eScan are labeled “Test Mode” and the results in Tally are read in and reported as “Test Mode.” This feature is offered as an extra measure of security to prevent mixing live data with test data, but most importantly, all records that result from this test run are labeled as such, providing clear documentation trail of the readiness test.
<b>TRANS</b>	Translation, Recording, and Audio Normalization System. A software application from Hart InterCivic Election Solutions Group used by translators and voice-over professionals to provide multi-language text translation and audio recordings for a BOSS V. 3.0 Election database.
<b>unaffiliated voter</b>	Registered voter who has not declared a political party preference for voting in primary elections.

<b>under vote</b>	<p>EAC DEF – Occurs when 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 race.</p> <p>eSlate—When a voter makes P selections in a Vote For N of M contest, where <math>P &gt; 0</math> and <math>P &lt; N</math>; eSlate will warn the voter of undervote on the ballot summary page.</p> <p>Ballot Now – When a voter makes fewer selections in a contest than allowed.</p>
<b>unresolved ballot</b>	In Ballot Now, a ballot that contains an undervoted contest, an overvoted contest, or a contest with a selected write-in, or a blank or damaged ballot.
<b>USB</b>	Universal Serial Bus. A serial bus for connecting peripheral devices to a computer.
<b>user</b>	Some combination of a login ID (user ID) and a password that allows a level of access to functions in a software application.
<b>validation</b>	EAC DEF – The process of evaluating a system or component during or at the end of the development process to determine whether it satisfies specified requirements. (Patterned after IEEE Std. 610.12–1990.)
<b>VBO (Verifiable Ballot Option)</b>	The HART InterCivic VS VVPAT (Voter Verified Paper Audit Trail) device that can be connected to the eSlate voting unit inside the voting booth in order to print a paper record of every ballot cast through the eSlate voting unit.
<b>verification</b>	FEC DEF – The process of evaluating a system or component to determine whether the products of a given development phase satisfy the conditions (such as specifications) imposed at the start of that phase. (Patterned after IEEE Std. 610.12–1990.)
<b>vote for N of M</b>	EAC DEF –Ballot choice in which voters are allowed to vote for a limited number of candidates for a single office from a larger field of candidates.

	In the Hart Voting System, Office and Proposition contests can use vote for N of M logic.
<b>voted ballot</b>	EAC DEF – Ballot that a voter has finished filling in, but has not yet cast or spoiled.
<b>voter</b>	A person registered to vote in the election for whom their precinct is known.  The person who votes in an election.
<b>Voter Provisional Stub</b>	The tape printed by a JBC when an Access Code is issued for a provisional ballot. The Provisional Ballot Stub contains a timestamp, election date, election name, precinct name, a retrieval code, and a signature area. The Voter Provisional Stub is retained by the pollworker.
<b>voter registration computer</b>	An electronic poll book sometimes known as a “VR Computer.”
<b>voter registration system</b>	EAC DEF – A set of processing functions and data storage that maintains records of eligible voters.
<b>voter verified audit record</b>	EAC DEF – Human-readable printed record of all of a voter’s selections presented to the voter to view and check for accuracy.
<b>voter-verified paper audit trail (VVPAT)</b>	EAC DEF – See voter verified audit record.
<b>voting booth</b>	See booth, voting.
<b>voting pattern</b>	A particular method by which a voter makes a choice of the appropriate number of contest options in a contest.
<b>voting station</b>	EAC DEF – Location within the polling place where voters may record their votes. A voting station includes the voting booth or enclosure and the vote-capture and recording device.

<b>voting system</b>	EAC DEF – The integrated mechanical, electromechanical, or electronic equipment and software required to program, control, and support the equipment that is used to define ballots; to cast and count votes; to report and/or display election results; and to maintain and produce all audit trail information. It additionally includes the associated documentation used to operate the system, maintain the system, identify system components and their versions, test the system during its development and maintenance, maintain records of system errors and defects, and determine specific changes made after system certification. A voting system may also include the transmission of results over telecommunication networks. See also electronic voting machine, voting equipment, and voting machine.
<b>voting system software</b>	EAC DEF – All the executable code and associated configuration files needed for the proper operation of the voting system regardless of the location of installation and functionality provided. This includes third party software such as operating systems, drivers, etc. See also dynamic voting system software, semistatic voting system software, and static voting system software.
<b>voting system testing</b>	EAC DEF – Examination and testing of a computerized voting system by using test methods to determine if the system complies with the requirements in the Voluntary Voting System Guidelines and with its own specifications.
<b>voting system test laboratory</b>	EAC DEF – Test laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) to be competent to test voting systems. When NVLAP has completed its evaluation of a test lab, the Director of NIST will forward a recommendation to the EAC for the completion of the accreditation process.
<b>VR</b>	Voter Registration.
<b>VVPAT-Ballot Box</b>	EAC DEF – Ballot box where the paper record of each voter’s vote is deposited.

<b>VVPAT-Display</b>	EAC DEF – Transparent covering over the paper record printed by the DRE-VVPAT. It permits a voter to inspect the paper record but prevents the voter from physically handling the paper record.
<b>VVPAT-Printer</b>	EAC DEF – Printing capability of the voting system, including the printer and any associated device involved in printing the paper records and transferring them to ballot boxes.
<b>WAV file</b>	A file format used for storing digital audio.
<b>write-in</b>	The name of a candidate entered by the voter in order to vote for a candidate that is not listed on the ballot.
<b>write-in, certified</b>	A list of candidates that have been certified by the Election Authority as being valid write-in choices.
<b>write-in voting</b>	EAC DEF – To make a selection of an individual not listed on the ballot. In some jurisdictions, voters may do this by using a marking device to physically write their choice on the ballot or they may use a keypad, touch screen or other electronic means to enter the name, depending on the type of voting system in use.  Allows the voter to define write-in candidates. The number of write-ins in a contest must be < or = to N in a Vote For N of M contest.
<b>XLIFF</b>	XML Localization Interchange File Format. An XML vocabulary used for language translation.
<b>XML</b>	eXtensible Markup Language. A structured, extensible, text-based data definition and data exchange format.
<b>Zero Tape Report</b>	The name of the JBC or eScan report that prints out when polls are opened on the first day of Early Voting and on Election Day. This report lists the timestamp, number of precincts at the polling place, the contests and candidates on all ballots available at the polling place, and verifies that the number of votes for each candidate is zero.



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