# ClearCount 1.4

## Maintenance Guide
## (Vote-by-Mail Campaign 2)

# ClearCount Maintenance Guide (Vote-by-Mail Campaign 2)

Clear Ballot Part Number: 100023-10012

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# Preface

This section defines the purpose of this document. It contains the following subsections.

- About this document
- Scope of this document
- Intended audience
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## About this document

This document provides information about preventive and corrective maintenance for the ClearCount system. It assumes that the ClearCount system has been through pre-election testing. This document corresponds to the *VVSG 2005, Volume 2 Section 2.9* requirement for the Technical Data Package (TDP).

> ✓ A ClearVote™ system can comprise the ClearAccess™, ClearAudit™, ClearCast™, ClearCount™, and ClearDesign™ products. Jurisdictions are not required to purchase all products. You can ignore references to any ClearVote components that are not part of your voting system. Also ignore implementation options that are not relevant to your policies and procedures.

## Scope of this document

This section provides information about the following aspects of the ClearCount system:

- Maintenance procedures
- Maintenance equipment
- Maintenance facilities and support
- Error messages requiring operator intervention
- Scanner error messages

## Intended audience

This document is intended for election officials and election staff who are responsible for operations and maintenance before, during, and after an election. This document is also used by Clear Ballot personnel who support election officials and election staff.

## Contact us

Clear Ballot Group welcomes your feedback on our documentation. Please send comments to Documentation@ClearBallot.com.

If you have questions about using your ClearVote product, contact your Clear Ballot representative.

# Chapter 1. Maintenance procedures

*Responsive to VVSG 2005, Volume 2, Section 2.9.2.*

This section describes all required and recommended preventive and corrective maintenance tasks for the ClearCount system, including hardware and software tasks.

## 1.1 Preventive maintenance procedures

Responsive to *VVSG 2005, Volume 2, Section 2.9.2.1.*

This section covers required and recommended preventive maintenance procedures, including software tasks, such as, election backup. It is organized by pre-election preventive maintenance procedures, election preventive maintenance procedures, and postelection preventive maintenance procedures. This section also describes how to care for each piece of hardware while the system is operating.

### 1.1.1 Pre-election preventive maintenance

ClearCount pre-election preventive maintenance consists of the following tasks, which are described later in this section:

- Charging laptop computers.
- Cleaning scanners.
- Replacing the scanner consumables. Clear Ballot recommends that jurisdictions change consumables at the beginning of every election, with the exception of jurisdictions scanning fewer than 60,000 ballots per election. These smaller jurisdictions should examine their consumables for wear, and consult with their Fujitsu service representative.

### 1.1.2 Election preventive maintenance

ClearCount election preventive maintenance consists of cleaning the scanners on the recommended schedule (as described in "Cleaning scanners" on page 7), following the procedures provided in the scanner manufacturer's guide for the applicable model.

For very large elections, jurisdictions should consult the manufacturers' maintenance schedules to see if any consumable replacement is recommended.

### 1.1.3 Postelection preventive maintenance

ClearCount postelection preventive maintenance consists of cleaning the scanners before packing them away, following the procedures provided in the scanner manufacturer's guide for the applicable model.

In addition, the jurisdiction should schedule a preventive maintenance visit with Fujitsu prior to its next major election.

## 1.1.4  Hardware preventive maintenance

The following table provides an overview of the ClearCount preventive maintenance tasks related to hardware.

**Table 1-1. Hardware preventive maintenance parts and personnel**

| Task | Personnel | Part or equipment | Documentation | Third-party coordination |
|---|---|---|---|---|
| Charging laptop computers | Principal supervisor or assistant supervisor (1) | Laptop computers | Manufacturer's user guide | NA |
| Cleaning scanners | Scanner maintenance and troubleshooting person (1) | Fujitsu Scanner Cleaning Kit | *ClearVote Approved Parts List* | Optional training by Fujitsu service personnel |
| Replacing scanner consumables | Scanner maintenance and troubleshooting person (1) | Appropriate Fujitsu consumables | *ClearVote Approved Parts List* | Training by Fujitsu service personnel |

### 1.1.4.1  Charging laptop computers

ClearCount laptop computers feature built-in batteries capable of providing a minimum of two hours of operation time. Laptops should be charged for at least six hours prior to pre-election testing and prior to the start of Election Day scanning to ensure that the internal batteries are sufficiently charged.

> When readying the laptop for battery charging, visually inspect it for signs of physical damage. Clean the screen, if necessary, using a microfiber cloth. If the unit is damaged, consult your supervisor immediately.

For further information, consult the manufacturer's documentation for the applicable laptop model.

### 1.1.4.2  Cleaning scanners

During the election, Clear Ballot recommends that the scanners be cleaned every 10,000 pages, or approximately once every 4 hours of use. Cleaning a scanner consists of opening its casing and cleaning the rollers, sensors, and paper paths with Fujitsu cleaning materials.

For detailed instructions on how to clean the scanner, consult the manufacturer's procedures for the applicable scanner model.

Fujitsu sells cleaning materials (including gloves, cloths, swabs, and cleaning solution) specifically designed for use with its scanners. Clear Ballot recommends using only certified Fujitsu cleaning supplies. For details about the scanner cleaning kit part number, see the *ClearVote Approved Parts List*. For details about the procedures used to clean scanners properly, see the manufacturer's procedures for the applicable model of scanner.

For detailed information about managing scanner maintenance, see the manufacturer's procedures in the documentation for the applicable scanner model.

### 1.1.4.3 Replacing scanner consumables

Scanners contain the following replaceable parts, called consumables:

- Pick rollers
- Separator rollers
- Brake rollers
- Pad assemblies

For more information about obtaining and installing consumables, as well as recommended maintenance schedules, consult the manufacturer's documentation for the applicable scanner model. Clear Ballot recommends using only certified Fujitsu replacement supplies. For a list of consumables and their part numbers, see the *ClearVote Approved Parts List*.

## 1.1.5 Software preventive maintenance

The following table provides an overview of the ClearCount preventive maintenance tasks related to software.

**Table 1-2. Software preventive maintenance**

| Task | Personnel | Part or equipment |
|------|-----------|-------------------|
| Updating Windows Defender | Windows administrator | ScanStation and election administration station computers |
| Validating software versions | Windows administrator | Election administration station |
| Backing up the election | Access level of dbadmin or above | A temporary external hard drive is used as part of the procedure for backing up. After the backup completes, the system administrator must remove the external hard drive from the ScanServer. |

### 1.1.5.1  Updating Windows Defender

Microsoft provides the Windows Defender Antivirus program with its Windows operating system. To keep the virus definitions up-to-date, you must update the program. Microsoft recommends that Windows Defender Antivirus be updated at least once a week. Clear Ballot recommends that the Windows Defender Antivirus program be updated on every ScanStation and election administration station prior to each election.

Because computers used in elections must *never* be connected to the Internet, the virus definition update must be done offline using removable media.

> ✓ If Windows software restriction policies are in effect on the computer being updated, disable the restrictions or add a temporary path rule to allow the update to run. See "Implementing a software restriction policy (SRP)" in the *ClearCount Election Preparation and Installation Guide* for more information.

To update Microsoft antivirus software offline:

1. On a computer outside the closed ClearCount network, and that has a USB port and Internet connection, navigate to https://www.microsoft.com/en-us/windows/windows-defender.

2. Download the antivirus software according to the instructions for your operating system version. The software is delivered as a single file named *mpam-fe.exe* or something similar.

3. Insert a USB drive into a USB port on the computer you downloaded the software to, copy the file to the USB drive and then eject the USB drive.

4. Insert the USB drive into a USB port on one of the election administration station or ScanStation computers.

5. Copy the file to that computer and then eject the USB drive.

6. Double-click the file and follow the instructions to complete the installation.

7. Repeat the installation process on each election administration station and ScanStation computer.

> ✓ Maintain the history and archive copies of each update.

### 1.1.5.2  Validating software versions

The following procedure should be used to verify that the correct software is loaded on the ClearCount system, that there is no unauthorized software, and that the ClearCount software has not been modified.

Clear Ballot provides a list of all approved files present on a ClearCount ScanServer, along with the initial documentation provided to the election authority for your state. This list includes SHA-256 file digests for each file on the system.

To access the list of all files on the system:

1.  At an election administration station, log in to ClearCount as administrator.

2.  From the **Election Index** page, click the login drop-down menu (next to the user name) and select **About this software**.
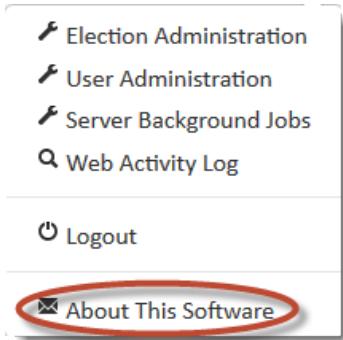


3.  On the About this software page, the Clear Ballot Product Files tab lists the ClearCount software. The Installed System Packages tab lists third-party packages included with the ClearCount software.



Compare the official printed version of the *ClearCount System Identification Guide* to the About this software page for its installed version of ClearCount. If the two lists do not match, the system must be reinstalled. Also, if any of the file digests do not match, the system must be reinstalled.

If mismatches persist between the list from your state and the software list, notify your state election authority and Clear Ballot before continuing to use the system.

### 1.1.5.3 Backing up the election

A user with a dbadmin access level or above can back up the election. This consists of backing up the database itself, along with associated card image files, in a single operation. For details about how to back up the election, see the *ClearCount Election Administration Guide*.

> Following the final election backup and archive, be sure to delete old elections so the server has enough space for the next election.

### 1.1.5.4 Database tuning and performance analysis

A ClearCount election database is self-tuning. No customer tuning is required. Database performance analysis is not required. If, for any reason, a jurisdiction is concerned about database performance, it should contact Clear Ballot Technical Support.

## 1.2 Corrective maintenance procedures

Responsive to *VVSG 2005, Volume 2, Section 2.9.2.2*.

The following sections describe corrective maintenance procedures for the ClearCount system, organized chronologically.

## 1.2.1 Pre-election corrective maintenance

Because the ClearCount system is composed entirely of COTS hardware components, any component that fails prior to the election should be replaced with a new component.

If ClearCount software appears to be failing prior to the election, contact Clear Ballot Technical Support. If necessary, the software can be reinstalled over the current installation.

## 1.2.2 Postelection corrective maintenance

Postelection, the jurisdiction should replace any equipment that exhibited critical unrepairable failures during the election.

## 1.2.3 Errors requiring operator intervention

The following sections describe errors requiring operator intervention.

### 1.2.3.1 Replacing failed or deficient equipment

The procedure for replacing failed or deficient equipment varies depending upon when the defect is detected relative to logic and accuracy (L&A) testing for an election. If a defect is detected:

- Before L&A testing—Replace the faulty hardware.
- During L&A testing—Replace the faulty hardware and repeat L&A testing.
- After L&A testing—Consult local statutes regarding the replacement of voting equipment.

Clear Ballot advises jurisdictions to procure and test extra hardware to ensure faulty equipment can be replaced when needed.

Clear Ballot strongly encourages every jurisdiction to enter into a service contract with Fujitsu, the scanner manufacturer. Scanner service technicians are able to diagnose, service, and, if necessary, quickly replace a malfunctioning scanner.

✓ If the server must be replaced with a spare, a backup of the election should be restored onto the new server.

✓ Any box in progress during a hardware failure should be deleted and rescanned.

## Mean Time to Repair (MTTR)

*Responsive to VVSG 2005, Volume 1, Section 4.3.5.*

As stated in the *ClearVote Personnel Deployment and Training Plan*, a trained technician who can perform basic maintenance and replace any failed hardware component must be present at each operational site.

Any hardware item can be replaced in less than ten minutes with an appropriately tested spare. Basic maintenance to any scanner can be diagnosed and performed in ten minutes or less. Any problem requiring more extensive maintenance results in that hardware item being replaced to ensure continuity of operations. Since both maintenance and replacement of equipment can occur in less than ten minutes, the mean time to repair the system is ten minutes.

Clear Ballot recommends having one of:

- Current service contracts providing for on-site maintenance and equipment replacement during the election cycle with Fujitsu *and* the jurisdiction's computer vendor
- One spare scanner, preferably of the certified configuration (although it can be lower capacity) for continuing operations while the primary scanner is being repaired, and one spare computer

If the service contracts with Fujitsu and the computer vendor provide on-site service, the jurisdiction need not station technician resources on-site or nearby. However, if no such contracts are in place, Clear Ballot recommends that one of the following resources be present on-site or within a thirty minute drive of the jurisdiction:

- A Clear Ballot technical staff member
- A jurisdiction technician trained by Fujitsu or Clear Ballot
- A third-party IT contractor with known skills in scanner and computer maintenance

### 1.2.3.2 Correcting deficiencies or faulty operations in software

*Responsive to VVSG 2005, Volume 2, Section 2.9.2.2.b.*

Upon identifying a defect, follow these steps for the applicable deficient or faulty item in the *ClearCount Election Preparation and Installation Guide*:

1. Ensure all settings are configured properly.

2. Ensure all software is installed correctly.

3. Reinstall the software.

4. Contact Clear Ballot Technical Support. They will try to provide a workaround.

5. If a patch, bug fix, or upgrade is required, Clear Ballot develops and certifies the fix as quickly as possible. The fix is then made available in keeping with standard distribution mechanisms.

> Each jurisdiction must consult with local statutes regarding the replacement of election software.

### 1.2.3.3 Modifications for upgraded software

The procedure for upgrading the ClearCount software is described in the *ClearCount Election Preparation and Installation Guide*. It is not necessary to uninstall the ClearCount software prior to installing an upgrade.

### 1.2.3.4 Personnel required for each task

For details about the personnel required for system maintenance tasks, see the *ClearVote Personnel Deployment and Training Plan*.

### 1.2.3.5 Third-party coordination

For details about coordinating with third parties on system maintenance (such as, Fujitsu), see the "Scanner maintenance and troubleshooting role" section in the *ClearVote Personnel Deployment and Training Plan*.

# Chapter 2.  Maintenance equipment

Responsive to *VVSG 2005, Volume 2, Section 2.9.3*.

The only special purpose maintenance equipment used for the ClearCount system are the calibration cards used at the beginning of each election process to test the scanner cameras. For further details about these calibration cards, see "Testing the scanner cameras" in the *ClearCount Election Preparation and Installation Guide*.

For details about the maintenance equipment for the Fujitsu scanners, see the *ClearVote Approved Parts List*.

For a list of all hardware components needed to operate a ClearCount system, see the *ClearVote Approved Parts List*.

## 2.1  Paper-based systems

For details about card stock requirements for ClearCount target cards and box labels, see the *ClearCount Election Preparation and Installation Guide*.

# Chapter 3.  Maintenance facilities and support

Responsive to *VVSG 2005, Volume 2, Section 2.9.5*.

This section identifies facilities and other supports required for equipment maintenance.

## 3.1   Spare or backup devices

The ClearCount system works on unmodified COTS hardware connected to a closed wired Ethernet. The size of the system is determined by the size of the jurisdiction and the number of ballots it needs to process. In smaller elections, a single scanner may be sufficient. However, all jurisdictions should obtain, at minimum, a second scanner to use for backup purposes. This second scanner should be put through readiness and L&A testing along with the election hardware so that it can be used immediately if a malfunction occurs.

## 3.2   Maintenance personnel and affiliation

For details about the personnel required for maintenance and their affiliation, see the *ClearVote Personnel Deployment and Training Plan*.

## 3.3   Maintenance furnishings, fixtures, and utilities

*Responsive to VVSG 2005, Volume 2, Section 2.8.2.*

Maintenance of ClearCount equipment requires: a table, lighting, and power for testing. Scanner maintenance also requires the consumables listed in the *ClearVote Approved Parts List*.

# Appendix A. Error messages requiring operator intervention

ClearCount error messages that require operator intervention can come from the following sources:

- Scanner
- ScandAll PRO™ (Fujitsu scanning software)
- ClearCount Tabulator and other software

## Scanner error messages

Scanner error messages may appear in the operator panel of the scanner (near the on/off button) or on the ScanStation computer display. Scanner errors can include physical problems, such as paper jams or TWAIN driver problems.

When a scanner problem occurs, the *Fujitsu fi-Scanner Error Recovery Guide* (an online help system that is installed with the scanner software on the ScanStation computer) opens automatically, and provides a link to more information about the problem.

For additional details about diagnosing and addressing scanner error messages, see the manufacturer's user guide for the applicable scanner model.

## ScandAll PRO error messages

ScandAll PRO scanning software error messages appear on the ScanStation computer display.

For a detailed description of ScandAll PRO error messages, see the *ScandAll PRO Help*, which is included with each installation of ScandAll PRO.

## ClearCount software error messages

errors and warnings are written to the election activity log and web activity log. In addition, Tabulator errors appear in the Tabulator window on the ScanStation computers.

# Appendix B.  Scanner error messages

The following table lists common errors. When in doubt, delete the box and rescan it to resolve problems. For additional information, refer to the Fujitsu scanner documentation, or contact Clear Ballot Technical Support.

## Table B-1. Error messages

| Error | Symptom | Remedy |
|---|---|---|
| Box requires rescanning | • Ballots become out of order<br>• Operator inadvertently terminates a box before all ballots are scanned | Run the DeleteBox utility, and then reinitiate the standard procedures for scanning a box.<br><br>If ballots are crumpled, folded, or torn, attempt to smooth them to aid in the scanning process. |
| Ballot misfeed | Scanner reports a multifeed or paper jam | Remove the offending cards from the scanner and reinsert them into the hopper to be rescanned.<br><br>• If ballots are crumpled, folded, or torn, attempt to smooth them to aid in the scanning process.<br>• If the identity of the target card is lost, rescan the box.<br>• If a significant number of unexpected multifeeds occur, check the sensors within the scanner because occluded sensors can cause multifeeds. |
| Target card not read | The Tabulator reports an error | Close the Tabulator, delete the box, restart the Tabulator, and rescan the box, ensuring the target card is placed so the scanner reads the bar-coded side first. |
| No response to Start Scan button or scanner incorrectly reports no paper on input tray | If the paper is curled upward or otherwise not triggering the paper sensor on the scanner's document feeder, scanning does not occur. | With your fingers, press down at the center of the leading edge of the paper and press the Start Scan button. |

| Error | Symptom | Remedy |
|-------|---------|--------|
| Tabulator error (not red) | A Tabulator error message or exception is displayed without a red background in the Tabulator Alerts pane. | Take the action indicated by the message and allow the Tabulator to continue to run. If the message repeats continuously, report it to Clear Ballot Technical Support. The Tabulator may need to be closed and restarted. |
| Red Tabulator error | A Tabulator error message or exception is displayed in red in the Tabulator Alerts pane. | Report the error to Clear Ballot Technical Support. Close the Tabulator, delete the box being scanned, restart the Tabulator, and rescan the box. |