

# ClearCount™ Election Preparation and Installation Guide

Version 1.17



Clear Ballot

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## **ClearCount Election Preparation and Installation Guide**

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## Preface

ClearCount is a central count paper-based optical scan voting system. ClearCount utilizes modern software architecture and scalable unmodified commercial-off-the-shelf (COTS) hardware to provide a faster, lower cost, and higher performing election experience.

## Audience and scope

This guide describes how to install and configure ClearCount software and supporting hardware and software in preparation for an election. The intended audience includes system administrators and election officials.

For information on working with the ClearCount system during an election, please see *ClearCount Election Administrator's Guide*.

## Using this guide

This guide describes how to install and configure the ClearCount system and prepare for an election.

### [Chapter 1. About Ballot Definition Files](#)

Describes how Ballot Definition Files are created and used.

### [Chapter 2. Installing ClearCount software](#)

Explains how to install ClearCount software on the system ScanServer.

### [Chapter 3. Configuring ScanStations](#)

Explains how to install and configure scanner software on ScanStation computers.

### [Chapter 4. Configuring Election Administration Stations](#)

Explains how to install and configure software on Election Administration stations.

### [Chapter 5. Hardening, validating, and securing the system](#)

Explains how to secure the ClearCount system and ensure it is operating properly.

### [Chapter 6. Setting up the scanning location](#)

Explains how to prepare physical elements of a site for scanning ballots.

**[Chapter 7. About target cards and box labels](#)**

Explains how to prepare physical target cards and box labels for the scanning process.

**[Chapter 8. Creating elections and users](#)**

Explains how to create and manage elections and users.

**[Chapter 9. ClearCount readiness testing](#)**

Explains how to ensure the ClearCount system is in proper working order prior to the start of the election.

**[Chapter 10. ClearCount logic and accuracy testing](#)**

Explains how to verify that ClearCount is tabulating ballots as expected.

**[Chapter 11. Uninstalling ClearCount](#)**

Explains how to remove ClearCount and supporting software.

**[Chapter 12. Breakdown and storage](#)**

Explains how to break down and store ClearCount equipment after an election.

**[Appendix A. Installation checklist](#)**

Provides a printable checklist for recording user names and passwords entering in the process of installing ClearCount software.

## **Contact Us**

Clear Ballot Group welcomes your feedback on our documentation. Please send your comments to [Documentation@ClearBallot.com](mailto:Documentation@ClearBallot.com).



## **Chapter 1. Defining elections**

Jurisdiction officials can work with Clear Ballot to audit elections. In each instance, Clear Ballot creates a Ballot Definition File (BDF).

### **1.1 About Ballot Definition Files**

The BDF is a unique file for each election that records all necessary options for casting and recording votes. BDFs enable the ClearCount software to successfully register ballot images and tabulate vote targets. Registering a ballot image consists of matching its coordinates to the normalized coordinate system for the ballot type in question.

The BDF uses the standard comma separated value (CSV) format to describe such things as the ballot style, the precinct, and each contest name and its associated choice names, and the coordinates of the corresponding vote targets.

Clear Ballot creates the BDF by analyzing and interpreting the election's ballot style PDFs, which are supplied by the jurisdiction. When the election is created, the ClearCount software processes the BDF in order to create and initialize a MySQL database on the ScanServer™.

#### **1.1.1 Scheduling BDF creation and transfer**

The following table details the schedule and steps for software and ballot installation, including key dates, events, and deliverables.

**Table 1-1. BDF Workflow**

Date	Event	Related deliverable
At least 45 days before Election Day	Election officials use their primary EMS to produce ballot style PDFs, and then securely transmit ballot style PDFs to Clear Ballot.	Ballot style PDFs for each precinct in the election.
	Election officials install ClearCount software and verify that it has been properly installed.	Expected hash code and version information.
30 days before the election	Clear Ballot creates a Ballot Definition File (BDF) from the ballot style PDFs and transmits it securely to the election officials.	Completed BDF.
30 to 15 days before the election	Perform readiness and L&A testing on software and BDF.	Readiness and L&A test results.

### 1.1.2 Transferring files with Clear Ballot

When the jurisdiction engages with Clear Ballot, Clear Ballot establishes an account and emails the jurisdiction a link to its secure download utility. The jurisdiction uses this utility to send its ballot style PDFs to Clear Ballot as well as to retrieve the BDF from Clear Ballot.

To send your ballot style PDFs to Clear Ballot:

1. Click the link in the PDF solicitation email you receive from Clear Ballot.
2. Sign in on the **Your Information** page.

3. Click **Continue to Download Page**.



The screenshot shows the 'Your Information' page of the Clear Ballot application. At the top is the Clear Ballot logo. Below it, the heading 'Your Information' is followed by a note: 'Before you download the files, please provide your contact information for tracking purposes. NOTE: This information is for internal tracking purposes only and will not be shared with third parties.' There are four input fields: 'Email \*', 'First Name \*', 'Last Name \*', and 'Company:'. Below these fields are two checkboxes: 'Store this information for next time' (checked) and 'Remember my info and skip this step'. At the bottom is a button labeled 'Continue to Download Page' with a right-pointing arrow.

**Figure 1-1. Clear Ballot Your Information page**

4. In the **Upload Files** page, click **Choose Files**.
5. Browse to the archive (.zip) file of your PDFs and click **Open**.



The screenshot shows the 'Upload Files' page of the Clear Ballot application. At the top is the Clear Ballot logo. Below it, the heading 'Upload Files' is followed by instructions: 'To upload a file, click Choose Files. Select files from the pop-up menu, or drag files from your computer on to the box. To upload multiple files at once, hold down the Shift or Control key as you select files. Note: To upload a folder, click [here](#) for instructions. If you have trouble uploading files, you can try using [Flash uploader](#) or [Standard Uploader](#).' There are two buttons: 'Choose Files' and 'Clear All'. Below these is a file selection area showing a single file: '8\_jeon\_2010g.pdf.zip' with a size of '6 KB'. At the bottom is a button labeled 'Upload Files' with a checkmark icon.

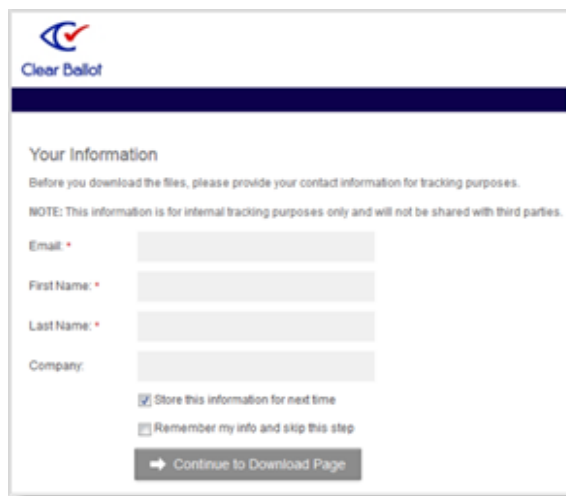
**Figure 1-2. Clear Ballot Upload Files page**

6. Click **Upload Files**.
7. After you receive the **Files Uploaded Successfully** page, close the browser.

When the BDF is ready to download, Clear Ballot sends an email message to the jurisdiction. The message contains a download link to the secure download utility, as well as two SHA-256 digests, one for the PDF zip file you uploaded, and one for the downloaded BDF zip file. These digests, which consist of a string of letters and numbers and the file name, can be used with any SHA-256 compliant hash tool to validate these files. If you note any discrepancies, contact Clear Ballot immediately.

To obtain your BDF:

1. Click the link in the email your received from Clear Ballot.
2. Sign in on the **Your Information** page, and click **Continue to Download Page**.



**Figure 1-3. Clear Ballot Your Information page**

3. From the **Download** page, locate the BDF zip file and click **Download**.
4. In the **Opening** dialog, select **Save File** and click **OK**.
5. Close the browser.

### 1.1.3 Logging the BDF

ClearCount logs the file digest of the BDF used to create the election, so that you can verify that you installed the same BDF that Clear Ballot transmitted.

When the election is created, the SHA-256 file digest of the BDF is logged to both the Election Activity Log and the Web Activity Log, as shown in the following example:

Tabulator 007 - General Election, Nov 6, 2012, Monroe County, NY

Election Activity Log

Start Date: 2014-05-15 End Date: 2014-05-15 Change

Filter table:

Time	Source	Election	User	Machine	Severity	Message	URL
2014-05-15 13:27:16	AdminDb	ny_monroe_2012g	cbg	192.168.15.34	info	Database ny_monroe_2012g created	/admin/db/create
2014-05-15 13:27:16	AdminDb	ny_monroe_2012g	cbg	192.168.15.34	info	Database ny_monroe_2012g tables were imported (BDF digest: a44b2ba81011c9ac3c49b9f730ac8db07ed4a09377c71fd54dc059f4833f30e3)	/admin/db/create
2014-05-15 13:27:16	AdminDb	ny_monroe_2012g	cbg	192.168.15.34	info	Image folder /var/cbg/Ballots/ny_monroe_2012g deleted.	/admin/db/create
2014-05-15 13:27:16	AdminDb	ny_monroe_2012g	cbg	192.168.15.34	info	Image folder /var/cbg/Ballots/ny_monroe_2012g created.	/admin/db/create
2014-05-15 13:27:16	AdminDb	ny_monroe_2012g	cbg	192.168.15.34	info	Election ny_monroe_2012g changed to scanning phase	/admin/db/create
2014-05-15 13:27:16	AdminDb	ny_monroe_2012g	cbg	192.168.15.34	info	Election ny_monroe_2012g made the currently active election	/admin/db/create
2014-05-15 13:27:24	WebServer	ny_monroe_2012g	cbg	192.168.15.34	info	Dashboard - ny_monroe_2012g	/dash/ny_monroe_2012g
2014-05-15 13:27:40	WebServer	ny_monroe_2012g	cbg	192.168.15.34	info	Log - ny_monroe_2012g	/log/ny_monroe_2012g

All entries per page 1 to 8 of 8

First Previous Next FF Last

Copy CSV Print

**Figure 1-4. BDF File Digest in the Election Activity Log**

This file digest *must* match the one sent by Clear Ballot. If it does not, contact Clear Ballot immediately.

## 1.2 About Comparison Result Files

A Comparison Result File, or CRF, is a file that presents the results export of the comparison system in a canonical import format that ClearCount can consume. It allows jurisdictions to compare ClearCount results with the results of the comparison system.



By their nature, comparison results are not available until after the close of polls.

### 1.2.1 Scheduling transfer of comparison system results

Jurisdictions should send the results export of their comparison system to Clear Ballot as soon as results are available after the close of polls. Clear Ballot creates the CRF from these results and sends it to the jurisdiction. The CRF can then be imported into ClearCount as long as the corresponding election exists in the system. The CRF can be imported either before or after ballots are scanned and tabulated by ClearCount.

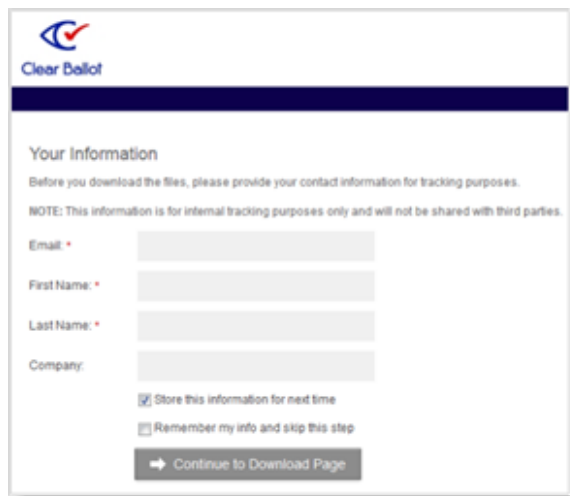
## 1.2.2 Sharing results files with Clear Ballot

The jurisdiction uses the secure download utility described in Transferring files with Clear Ballot on page 2 to send its comparison results to Clear Ballot.

Comparison results, in whatever file format created by the comparison system, should be collected in a zip file.

To send your comparison results to Clear Ballot:

1. Click the link in the CRF solicitation email you receive from Clear Ballot.
2. Sign in on the **Your Information** page, and click **Continue to Download Page**.



**Figure 1-5. Clear Ballot Your Information page**

3. In the **Upload Files** page, click **Choose Files**.

4. Browse to the archive (.zip) file of your CRFs and click **Open**.



**Figure 1-6. Clear Ballot Upload Files page**

5. Click **Upload Files**.
6. After you receive the **Files Uploaded Successfully** page, close the browser.

When the CRF is ready to download, Clear Ballot sends an email to the jurisdiction. This email message contains a download link to the secure download utility, as well as two SHA-256 digests, one for the zip file you uploaded, and one for the downloaded CRF zip file. These digests, which consist of a string of letters and numbers and the file name, can be used with any SHA-256 compliant hash tool to validate these files. If you note any discrepancies, contact Clear Ballot immediately.

To obtain your CRF:

1. Click the link in the email your received from Clear Ballot.
2. Sign in on the **Your Information** page, and click **Continue to Download Page**.
3. From the **Download** page, locate the CRF zip file and click **Download**. CRF archive files are named using the convention *Election\_Name.crf.zip* (for example, *fl\_leon\_2010g.crf.zip*).
4. In the **Opening** dialog, select **Save File** and click **OK**.
5. Close the browser.

## Chapter 2. Installing ClearCount software

A complete ClearCount system consists of one ScanServer™, one or more ScanStations™, and one or more Election Administration Stations, joined together by a closed, wired Ethernet network. The ClearCount software itself is installed only on the ScanServer, not on the ScanStations or Election Administration Stations.



Minimum computing hardware and operating system specifications are provided in *Supported Configurations, ClearCount*. This document is available from Clear Ballot service personnel.



As part of the installation process, the ClearCount software overwrites the existing operating system on the ScanServer computer with its own Ubuntu Linux operating system. If necessary, back up data that resides on the computer before launching the ClearCount installer.

The ClearCount installation generally takes 15 to 30 minutes. Files are installed at several different points in the process. You are asked to create and/or remember several user names, passwords, and IP addresses during the installation. For your convenience, this guide contains a form you can print and use to track these items. See ClearCount installation checklist on page 144.



Maintain this information in a safe and secure location.

In general, if you make a mistake at any point in the installation, the best practice is to quit the installation and start again from the beginning. There is no need to uninstall. The **Go Back** options in this installation wizard sometimes lead to a summary of the preceding steps rather than to the previous screen.



## 2.1 Installing ClearCount

To run the ClearCount installation wizard on the ScanServer computer:

1. Ensure data residing on the computer is backed up.



Election data *must* be archived through ClearCount before installing the upgrade. See *ClearCount Election Administrator's Guide, Backing Up an Election* for instructions.

2. Ensure no external drives are mounted.

3. Start the installation:

- a. Turn on the ScanServer computer. (Press the power button if the computer is already on.)
- b. *Immediately* press the key that accesses the startup menu. (For example, if using an HP computer, press **Esc** to access the startup menu.)



The key used depends upon computer make and model; consult your computer's documentation for details. To access the startup menu, you must press the key very quickly. If Windows begins to launch, it is too late. Restart the computer and try again.

- c. Insert the ClearCount DVD into the CD/DVD drive on the ScanServer computer.
- d. Press the function key that accesses the BIOS boot menu. (For example, if using an HP computer, press **F9**.)
- e. From the BIOS boot menu, select the CD/DVD drive. (For example, if using an HP computer, select **Optical Disk Drive** and press **Enter**.)



Later in this procedure, the computer boots from DVD *instead* of the hard drive.

The installation wizard launches.



The installation procedure advances from screen to screen. Delays can occur between screens.

4. In the **Language** screen, accept the default, English, by pressing **Enter**.



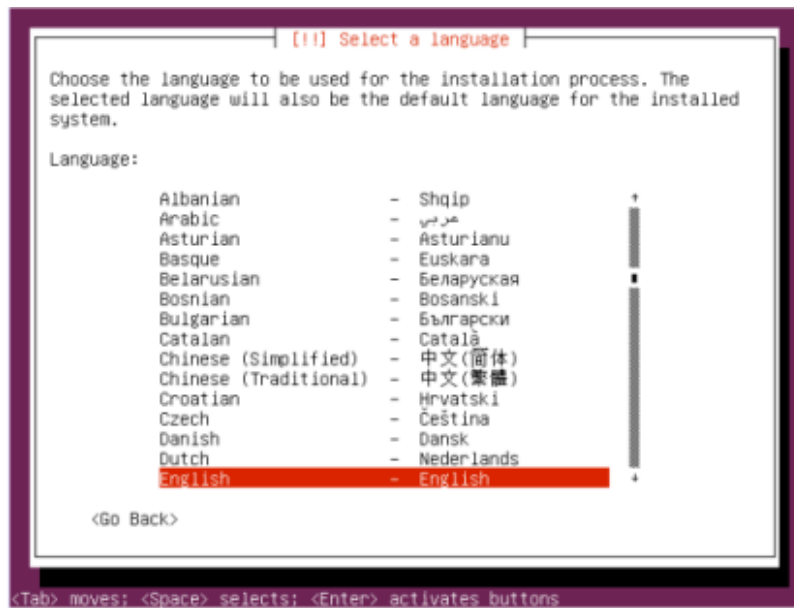
**Figure 2-1. Ubuntu Language screen**

5. In the Ubuntu splash screen, select **Install ClearBallot Ubuntu Server** and press **Enter**.



**Figure 2-2. Ubuntu splash screen**

6. In the **Select a language** screen, accept the default, English, by pressing **Enter**.



**Figure 2-3. Ubuntu Select a language screen**

7. In the **Select your location** screen, accept the default, United States, by pressing **Enter**.



**Figure 2-4. Ubuntu Select your location screen**

8. In the first **Configure the keyboard** screen, accept the default, **No**, by pressing **Enter**.

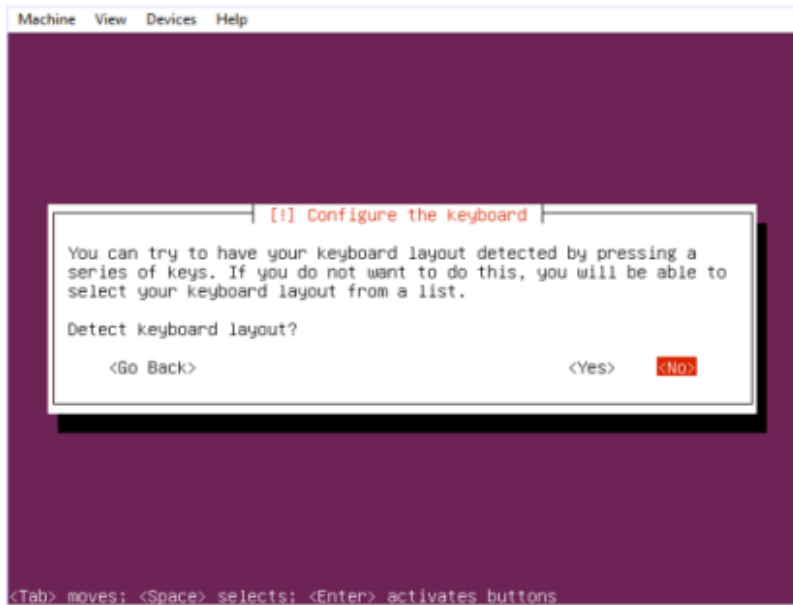


Figure 2-5. First Ubuntu Configure the keyboard screen

9. In the second **Configure the keyboard** screen, accept the default, English (US), by pressing **Enter**.

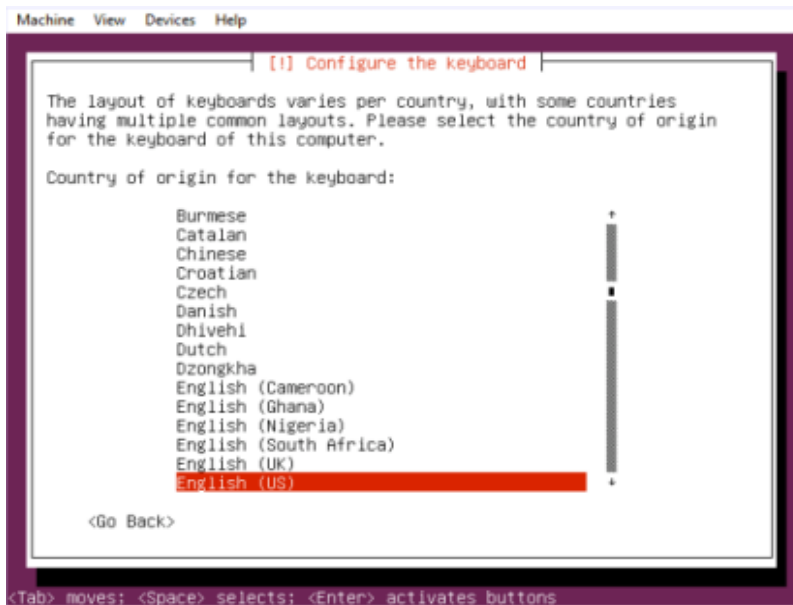
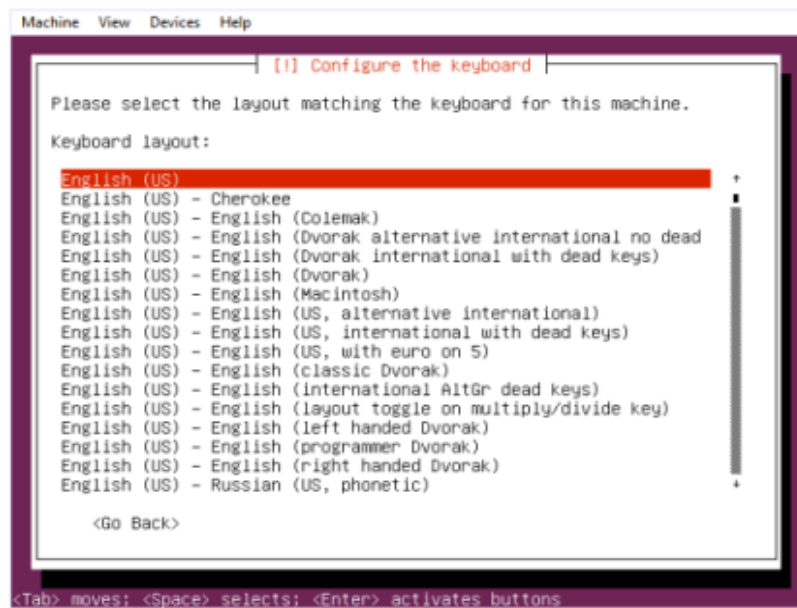


Figure 2-6. Second Ubuntu Configure the keyboard screen

10. In the third **Configure the keyboard** screen, accept the default, English (US), by pressing **Enter**.

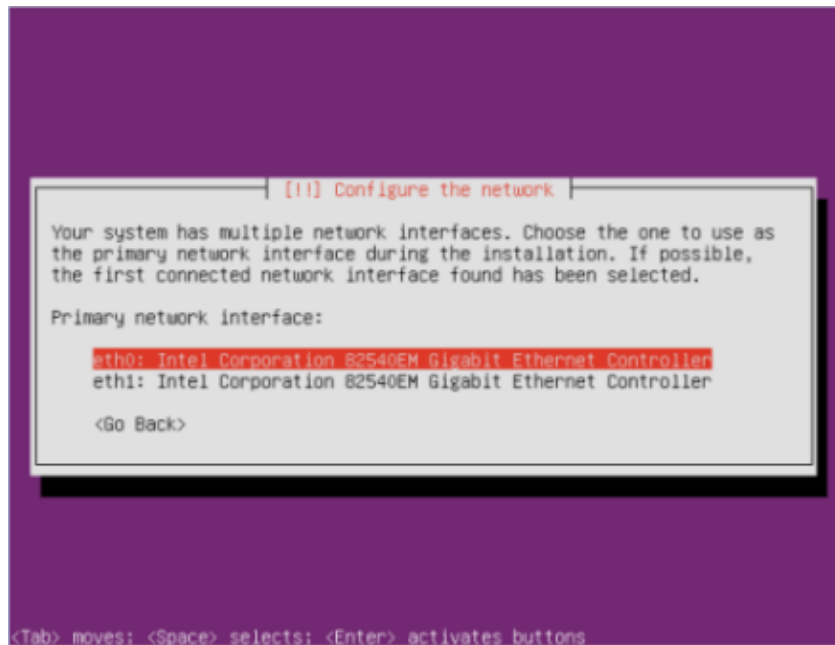


**Figure 2-7. Third Ubuntu Configure the keyboard screen**

11. (If applicable) In the **Configure the network** screen, select the network port you want to use and press **Enter**.



The installation wizard skips this screen if the computer has only one network port.



**Figure 2-8. First Ubuntu Configure the network screen**

12. Obtain the router IP address used by the computer.

- a. Open a command window:

**On a Windows 7 system**

Click **Start > All Programs > Accessories > Command Prompt**.

**On a Windows 8.1 Pro system**

From the **Start** page, select **Apps > Windows System > Command Prompt**.

- b. At the command prompt, type **ipconfig** and press **Enter**.

The **Windows IP Configuration** appears.

- c. Note the value of **Default Gateway**, which is the router IP address.

- d. (Recommended) Record the router IP address on the ClearCount installation checklist on page 144.

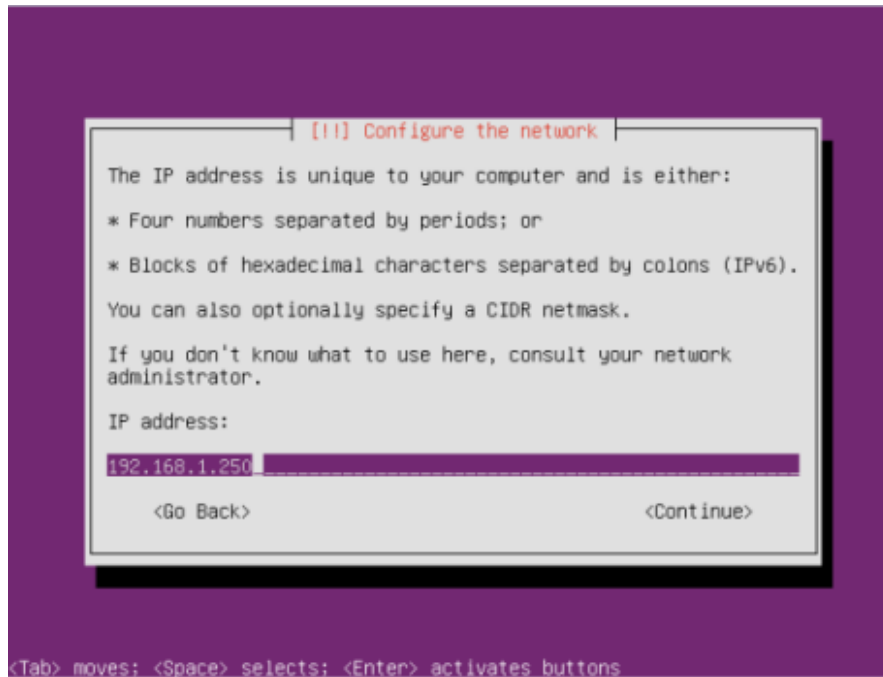


To troubleshoot router problems, please consult the model-specific commercial documentation for the router. Note that Clear Ballot does *not* recommend setting the router IP address.

13. In the next (or first) **Configure the network** screen, enter the server IP address and press **Enter**.



The first three sections of the server's IP address, separated by periods, must match those used by your router. The fourth section can be any unused number; Clear Ballot recommends 250. For example, if the router IP address is 192.168.1.1, use 192.168.1.250 for the server IP address.



**Figure 2-9. Second Ubuntu Configure the network screen**

14. (Recommended) Record the server IP address on the ClearCount installation checklist on page 144.

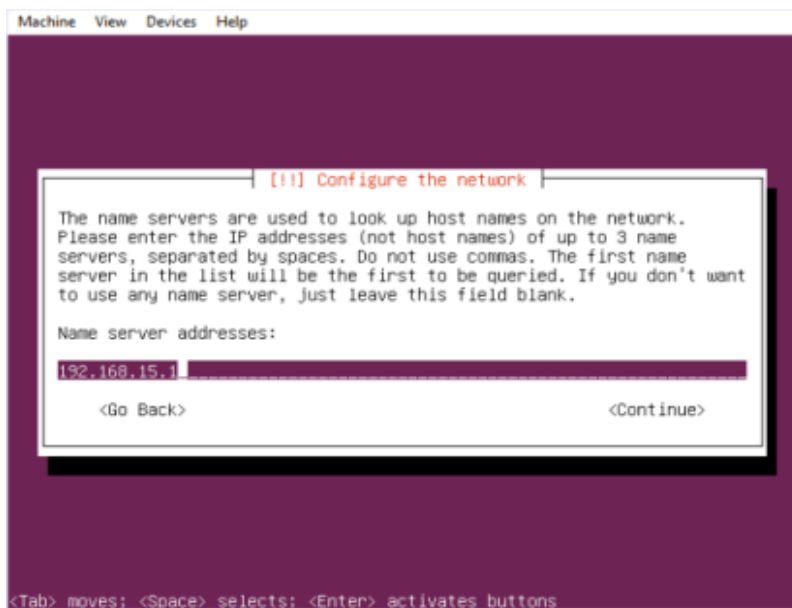


15. In the next **Configure the network** screen, enter the router IP address and press **Enter**.



**Figure 2-10. Third Ubuntu Configure the network screen**

16. In the next **Configure the network** screen, reenter the router IP address and press **Enter**.

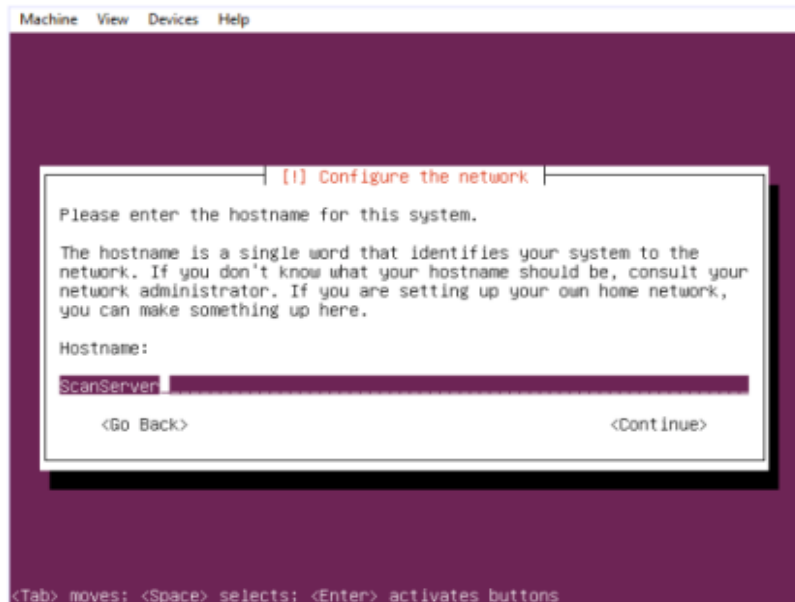


**Figure 2-11. Fourth Ubuntu Configure the network screen**

17. In the final **Configure the network** screen, enter the *hostname* and press **Enter**.



The hostname identifies the ScanServer computer, and is used in web browsers for navigating to the server. Clear Ballot recommends accepting the default hostname, ScanServer, but you can use another name.



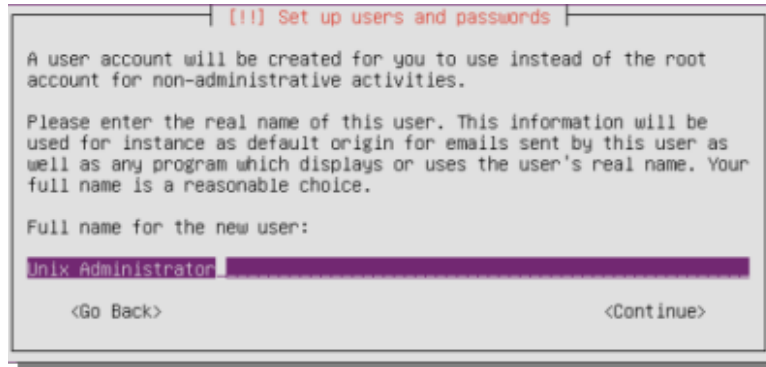
**Figure 2-12. Fifth Ubuntu Configure the network screen**

18. (Recommended) Record the hostname on the ClearCount installation checklist on page 144.

19. In the first **Set up users and passwords** screen, accept **Linux administrator**, the default full user name for the administrator of the local Linux account, by pressing **Enter**.

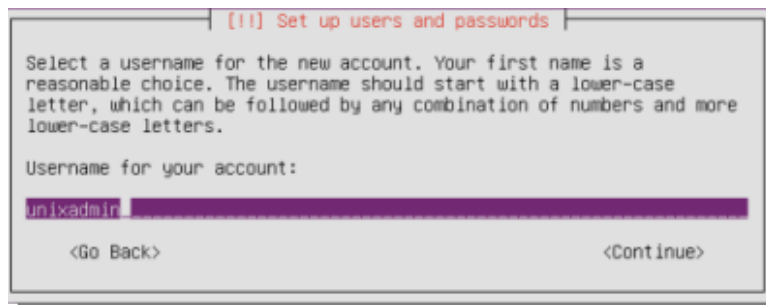


ClearCount records all logins for this account. Log in and use this account only if instructed to do so by Clear Ballot Technical Support. It is *not* for normal electoral duties.



**Figure 2-13. First Ubuntu Set up users and passwords screen**

20. In the second **Set up users and passwords** screen, enter the user name for logging in to the Linux account and press **Enter**.



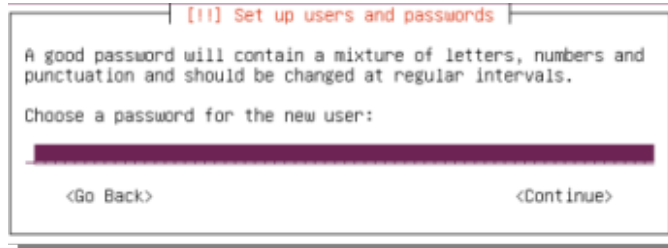
**Figure 2-14. Second Ubuntu Set up users and passwords screen**

21. (Recommended) Record the Linux user name on the ClearCount installation checklist on page 144.

22. In the third **Set up users and passwords** screen, enter the password for logging in to the Linux account and press **Enter**.

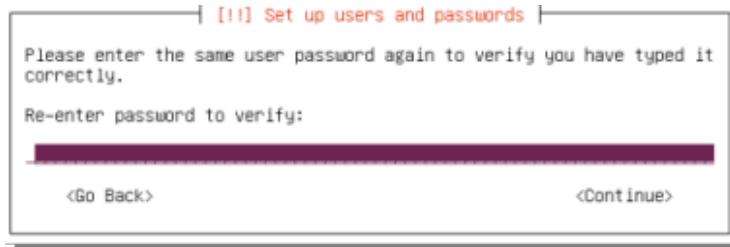


All passwords must satisfy the rules, and should meet the guidelines, provided in *ClearCount Election Administrator's Guide*.



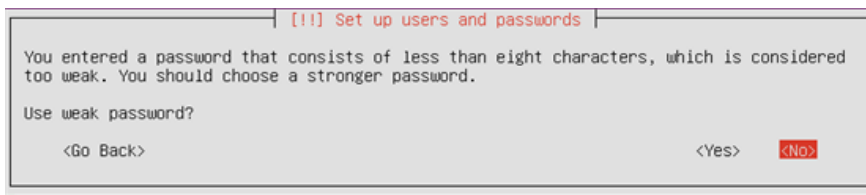
**Figure 2-15. Third Ubuntu Set up users and passwords screen**

23. In the fourth **Set up users and passwords** screen, reenter the password for the Linux account and press **Enter**.



**Figure 2-16. Fourth Ubuntu Set up users and passwords screen**

24. (If applicable) If the following screen appears, press **Tab** to advance to **<Yes>**, press **Enter**, select **Set up users and passwords** from the menu of installation steps, and reenter all account settings for the Linux administrator.



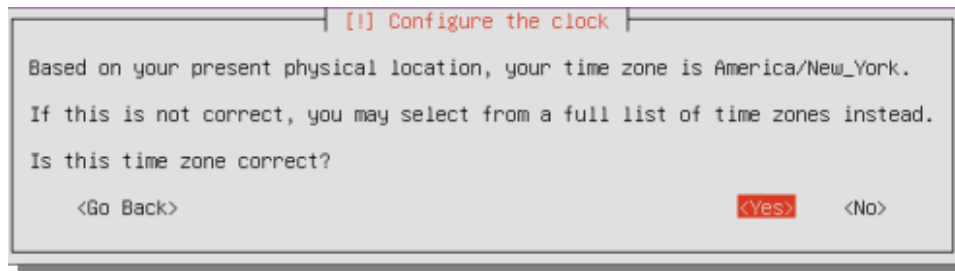
**Figure 2-17. Fifth Ubuntu Set up users and passwords screen**



The installation wizard skips this screen if password length is at least eight characters.

25. (Recommended) Record the Linux password on the ClearCount installation checklist on page 144.

26. In the **Configure the clock** screen, confirm your time zone and then press **Enter**.

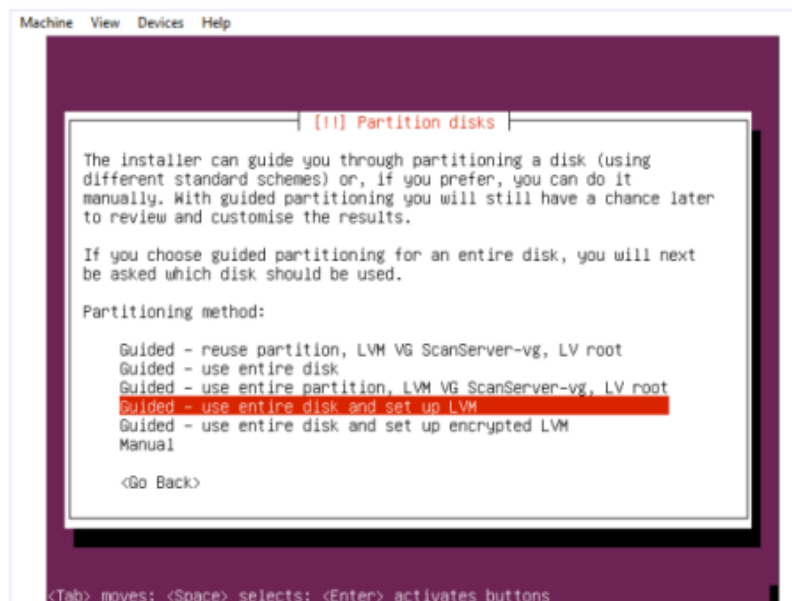


**Figure 2-18. Ubuntu Configure the clock screen**

27. In the first **Partition disks** screen, accept the default, **Guided – use entire disk and set up LVM**, and press **Enter**. (LVM stands for Logical Volume Manager, which is a flexible method of disk space allocation.)



The installation procedure is about to overwrite the existing operating system on the ScanServer computer with the Ubuntu Linux operating system. All data residing on the computer becomes irretrievable at this point, even if you return to prior steps in the procedure (using **<Go Back>**). You must ensure data residing on the computer that must be backed up is backed up. If you have any doubts about continuing, exit the installation wizard now.



**Figure 2-19. First Ubuntu Partition disks screen**

28. In the second **Partition disks** screen, select the disk to partition and press **Enter**.

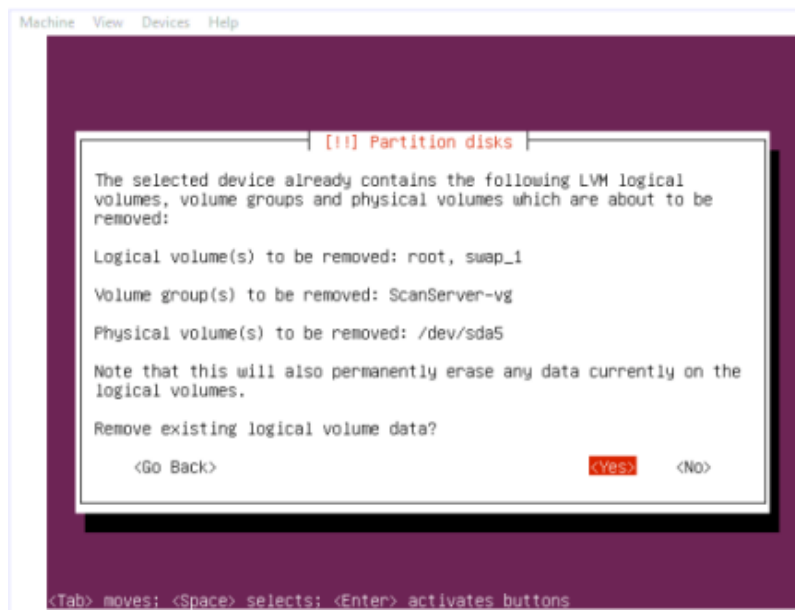


The primary internal hard drive is selected by default. If the hardware configuration includes more than one drive, do *not* select an external drive.



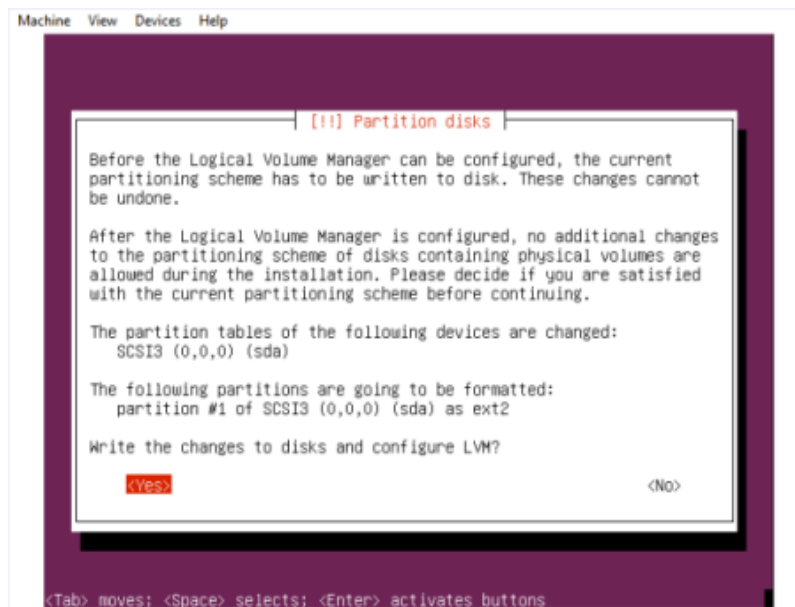
Figure 2-20. Second Ubuntu Partition disks screen

29. In the third **Partition disks** screen, press **Tab** to select **Yes** and then press **Enter**.



**Figure 2-21. Third Ubuntu Partition disks screen**

30. In the fourth **Partition disks** screen, press **Tab** to select **Yes** and then press **Enter**.



**Figure 2-22. Fourth Ubuntu Partition disks screen**

31. In the fifth **Partition disks** screen, accept the default amount of the volume group for the primary partition by pressing **Enter**.



Figure 2-23. Fifth Ubuntu Partition disks screen

32. In the sixth **Partition disks** screen, use the Tab key to select **Yes** to confirm the disk changes, and then press **Enter**.

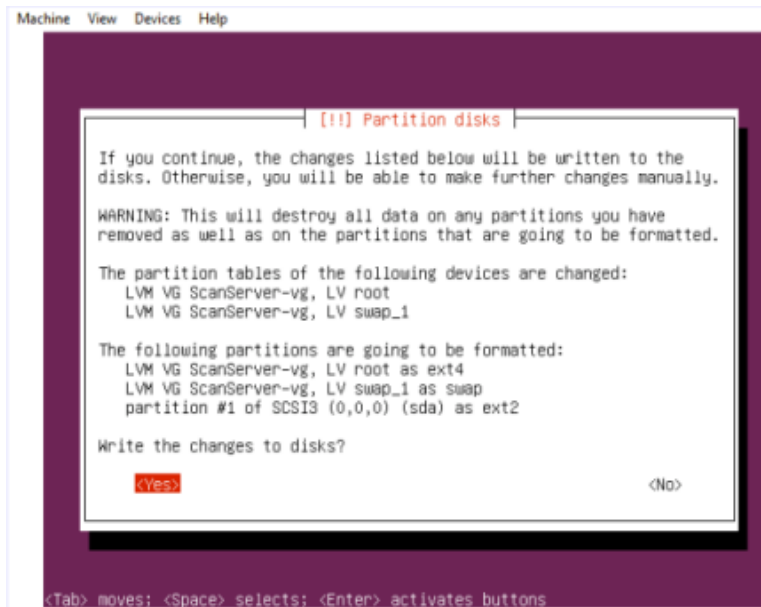


Figure 2-24. Sixth Ubuntu Partition disks screen



The system now installs a number of files. This may take several minutes.



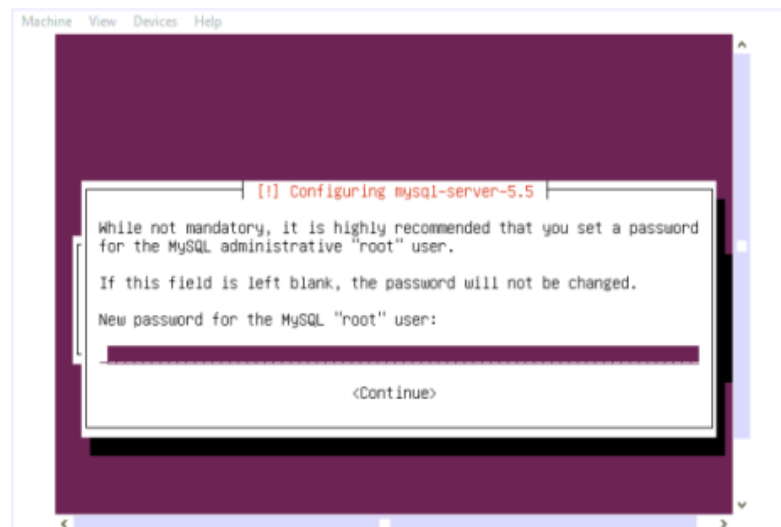
33. In the first **Configuring mysql-server-5.5** screen, enter a password for the MySQL database root user and press **Enter**.



All passwords must satisfy the rules, and should meet the guidelines, provided in *ClearCount Election Administrator's Guide*.

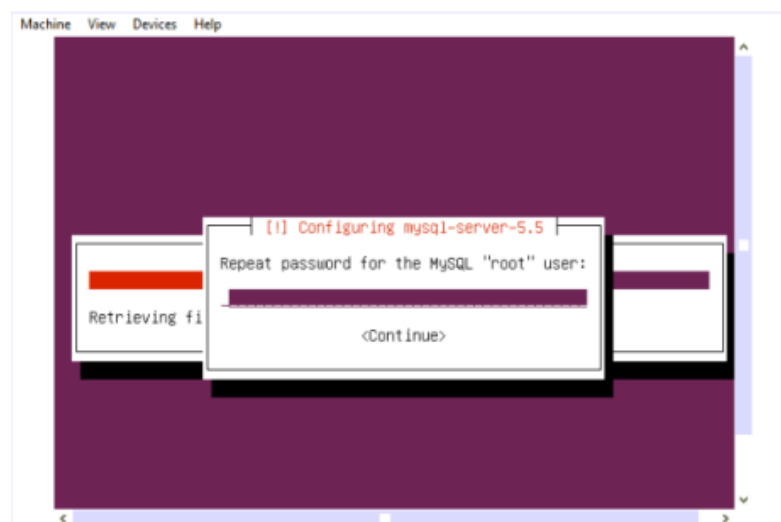


ClearCount records all logins for this account. Log in and use this account only if instructed to do so by Clear Ballot Technical Support. It is *not* for normal electoral duties.



**Figure 2-25. First Ubuntu Configuring mysql server screen**

34. In the second **Configuring mysql-server-5.5** screen, reenter the password for the database root user and press **Enter**.

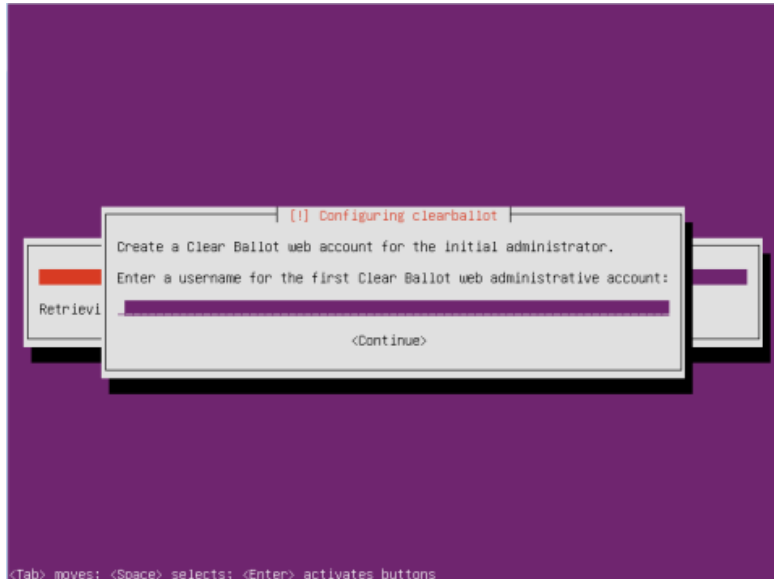


**Figure 2-26. Second Ubuntu Configuring mysql server screen**

35. (Recommended) Record the database root user password on the ClearCount installation checklist on page 144.
36. In the first **Configuring clearballot** screen, enter the user name for the first administrative account and press **Enter**.



ClearCount records all logins for this account. Clear Ballot recommends using an easily distinguishable name, such as the actual name of the user, to facilitate tracking the user.



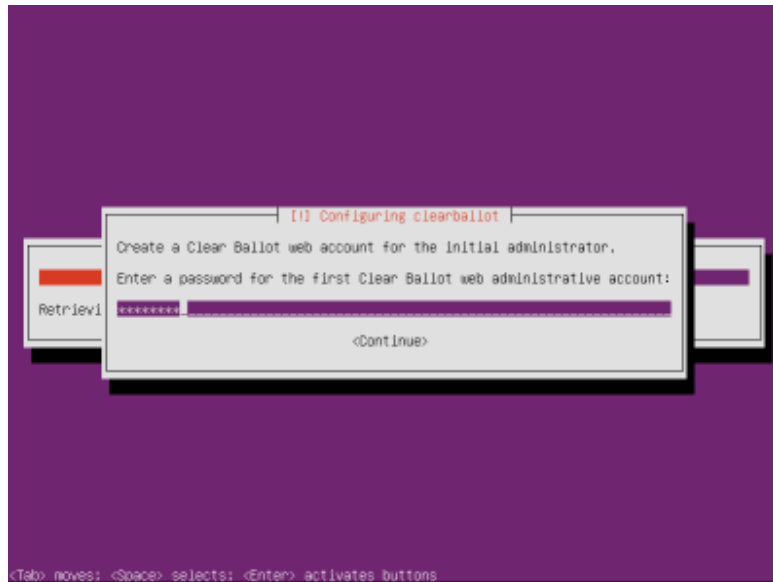
**Figure 2-27. First Ubuntu Configuring clearballot screen**

37. (Recommended) Record the user name for the first administrative account on the ClearCount installation checklist on page 144.

38. In the second **Configuring clearballot** screen, enter the password for the first administrative account and press **Enter**.



All passwords must satisfy the rules, and should meet the guidelines, provided in *ClearCount Election Administrator's Guide*.



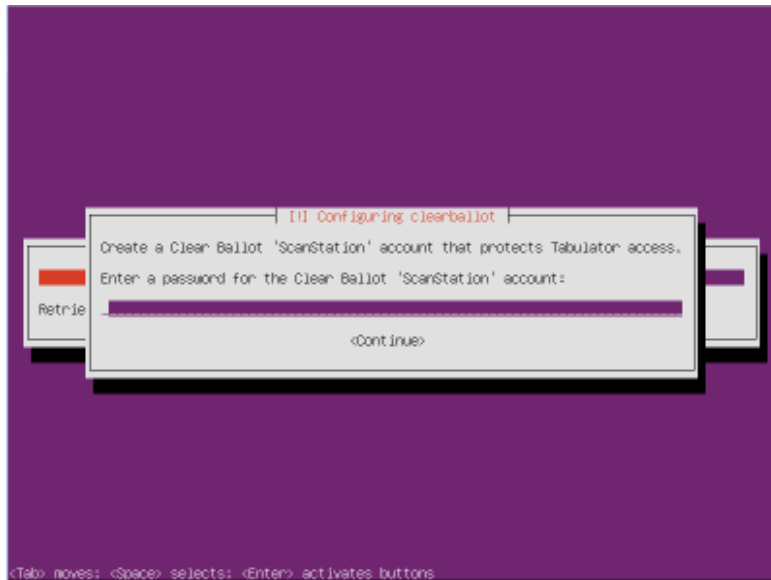
**Figure 2-28. Second Ubuntu Configuring clearballot screen**

39. (Recommended) Record the password for the first administrative account on the ClearCount installation checklist on page 144.

40. In the third **Configuring clearballot** screen, enter the password for the ScanStation account. This account protects Tabulator access. You enter this password on each ScanStation computer when Tabulator is launched to ensure tabulation is authentic. Press **Enter**.



All passwords must satisfy the rules, and should meet the guidelines, provided in *ClearCount Election Administrator's Guide*.



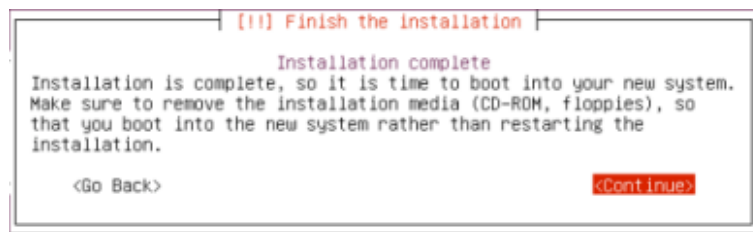
**Figure 2-29. Third Ubuntu Configuring clearballot screen**

41. (Recommended) Record the password for the ScanStation account on the ClearCount installation checklist on page 144.
42. Wait for up to 30 minutes as software is installed.



Do *not* unplug, close, or shut down the computer while you are waiting. Also do *not* eject the ClearCount DVD.

43. Upon completion, the following screen appears:



**Figure 2-30. Ubuntu Finish the installation screen**

44. Remove and secure the ClearCount DVD.

45. Reboot the computer.

The Ubuntu login screen appears on restart, indicating that the ScanServer is running and available.



**Figure 2-31. Ubuntu login screen**



Do *not* log in as Linux administrator at this time. In the event of an issue, only log in as Linux administrator under the direction of Clear Ballot Technical Support.

For information on setting up and connecting ScanStations to the ScanServer, see Configuring ScanStations on page 33. To perform pre-election administrative tasks such as creating elections and users, see Creating elections and users on page 131.

## 2.2 Restricting access to BIOS on the ScanServer

Access to BIOS is restricted by implementing a supervisory password. The following procedure for hardening Toshiba Satellite L855 computers is an example of how to do this. The behavior of BIOS depends upon computer make and model; consult your computer's documentation or contact Clear Ballot service personnel for details.

### Configuring Toshiba Satellite L855 computers

To restrict access to BIOS on a Toshiba Satellite L855 computer:

1. Shut down the ScanServer computer as follows:
  - On a Windows 7 system**  
Shut down the computer normally.
  - On a Windows 8.1 Pro system**  
Depress the **Shift** key while shutting down the computer.
2. Depress the **F2** key while starting up the computer.  
The BIOS manager appears upon startup.
3. Set the BIOS password:
  - a. Navigate to the **Security** tab using the arrow keys.
  - b. Navigate to the **Supervisor** password using the arrow keys.
  - c. Press **Enter**.
  - d. Enter and confirm the password.
  - e. Record the BIOS password on the ClearCount installation checklist on page 144.
4. Disable access to the Boot menu:
  - a. Navigate to the **Security** tab using the arrow keys.
  - b. Select **Boot Menu** using the arrow keys.
  - c. Press **Enter**.
  - d. Select **Disabled**.

5. Set boot order:
  - a. Navigate to the **Boot** tab using the arrow keys.
  - b. Select **HDD/SSD** using the arrow keys.
  - c. Press **F6** key until **HDD/SSD** is in position 1.
6. Press **F10**.

The **Exit Saving Changes** prompt appears.
7. Ensure **Yes** is selected and press **Enter**.

The computer reboots.
8. Turn the computer off and on.
9. Verify the changes.

### 2.3 Updating ClearCount

Updated ClearCount software is installed over the previous version. There is no need to uninstall the previous version.



Reinstalling ClearCount erases any election databases currently residing on the ScanServer. Ensure databases are archived before installing the upgrade. See *ClearCount Election Administrator's Guide, Backing up an election* for instructions.

To update ClearCount software on the ScanServer, it is necessary to temporarily change BIOS setup to permit booting from the DVD drive. The following procedure for reinstalling the software on Toshiba Satellite L855 computers is an example of how to do this. The behavior of BIOS depends upon computer make and model; consult your computer's documentation or contact Clear Ballot service personnel for details.

#### Updating ClearCount on Toshiba Satellite L855 computers

Do as follows:

1. Shut down the ScanStation computer as follows:
  - On a Windows 7 system**

Shut down the computer normally.
  - On a Windows 8.1 Pro system**

Depress the **Shift** key while shutting down the computer.

2. Depress the **F2** key while starting up the computer.  
The BIOS manager appears upon startup.
3. Enter the BIOS password. (See Restricting access to BIOS on the ScanServer on page 30.)
4. Enable access to the Boot menu:
  - a. Navigate to the **Security** tab using the arrow keys.
  - b. Select **Boot Menu** using the arrow keys.
  - c. Press **Enter**.
  - d. Select **Enabled**.

This allows you to boot from the DVD drive.
5. Press **F10**.  
The **Exit Saving Changes** prompt appears.
6. Ensure **Yes** is selected and press **Enter**.  
The computer reboots.
7. Turn the computer off and on.
8. Verify the changes.
9. Reinstall the ClearCount software. (See Installing ClearCount on page 9.)
10. *Disable* access to the Boot menu with reference to steps 1-9 of this procedure.



## Chapter 3. Configuring ScanStations

After installing the ClearCount software on the ScanServer, which you did following the instructions in Chapter 2, you must install and configure scanner software on the ScanStation computers. The following steps *must* be performed in the specified order on each ScanStation:

1. [Create a restore point.](#)
2. [Restrict access to BIOS.](#)
3. [Remove extraneous programs.](#)
4. [Disable wireless Internet access.](#)
5. [Install ScandAll PRO™.](#)
6. [Install the TWAIN driver.](#)
7. [Map the ScanStation to the ScanServer.](#)
8. [Create a desktop shortcut to the P: drive.](#)
9. [Configure the scanner as a device.](#)
10. [Run the scanner update script.](#)
11. [Configure ScandAll PRO.](#)
12. [Test the scanner cameras.](#)
13. [Set Windows passwords.](#)
14. [View the Windows Event Log.](#)
15. [Update Windows Defender definitions.](#)
16. [Restrict program access and add application whitelists.](#)
17. [Deny access to USB drives.](#)
18. [Power down and restart all ScanStation computers.](#)
19. [Validate software setup.](#)
20. [Test the ScanStation configuration.](#)
21. [Prepare for daily scanning.](#)



To maintain ScanStation security, the passwords for the Windows computers as well as the password for Tabulator should be known only to election officials or supervisors with appropriate privileges. These passwords *cannot* be shared with ScanStation operators. Likewise, ScanStation operators should not be given access to the DeleteBox utility. If a ScanStation operator needs to restart a process or correct an error, they should consult with the supervisor who enters the required passwords.



After completing the steps in this chapter and before first use, you must review and implement the hardening steps for all ScanStations specified in Hardening, validating, and securing the system on page 101.

### 3.1 Creating a restore point

Creating a restore point before making configuration changes to any ScanStation enables rolling back to the state that existed before the changes were made.



If you want, you can create intermediate restore points at any time in the process.

To create the restore point:

1. Log in to the ScanStation computer as a Windows administrator.
2. Do as follows:

#### On a Windows 7 system

- a. From the Windows **Start** menu, search for Restore point.
- b. From the top of the **Start** menu, select **Create a restore point**.

#### On a Windows 8.1 Pro system

- a. From the **Start** page, search for restore.
- b. From the search results, select **Create a restore point**.

The **System Properties** dialog appears.

3. (If necessary) Select the **System Protection** tab.
4. Click **Create**.

The **Create a restore point** dialog appears.

5. Enter a descriptive name for the restore point using this format:  
`yyyy-mm-dd--hh-mm-ss_Before_Clear_Ballot_configuration`

6. Click **Create**.

The restore point is created in a minute or two. Then the **System Protection** message box displays the message *The restore point was created successfully*.

7. Click **Close** to dismiss the message.
8. Click **OK** to dismiss the **Create a restore point** dialog.

### 3.2 Restricting access to BIOS on ScanStations

Access to BIOS is restricted by implementing a supervisory password. The following procedure for hardening Toshiba Satellite L855 computers is an example of how to do this. The behavior of BIOS depends upon computer make and model; consult your computer's documentation or contact Clear Ballot service personnel for details.

#### Configuring Toshiba Satellite L855 computers

To restrict access to BIOS on a Toshiba Satellite L855 computer:

1. Shut down the ScanStation computer as follows:

##### On a Windows 7 system

Shut down the computer normally.

##### On a Windows 8.1 Pro system

Depress the **Shift** key while shutting down the computer.

2. Depress the **F2** key while starting up the computer.  
The BIOS manager appears upon startup.
3. Set the BIOS password:
  - a. Navigate to the **Security** tab using the arrow keys.
  - b. Navigate to the **Supervisor** password using the arrow keys.
  - c. Press **Enter**.
  - d. Enter and confirm the password.
  - e. Record the BIOS password on the ClearCount installation checklist on page 144.

4. Disable access to the Boot menu:
  - a. Navigate to the **Security** tab using the arrow keys.
  - b. Select **Boot Menu** using the arrow keys.
  - c. Press **Enter**.
  - d. Select **Disabled**.
5. Set boot order:
  - a. Navigate to the **Boot** tab using the arrow keys.
  - b. Select **HDD/SSD** using the arrow keys.
  - c. Press **F6** key until **HDD/SSD** is in position 1.
6. Press **F10**.

The **Exit Saving Changes** prompt appears.
7. Ensure **Yes** is selected and press **Enter**.

The computer reboots.
8. Turn the computer off and on.
9. Verify the changes.

### 3.3 Removing extraneous programs

Uninstall any extraneous third-party programs that the manufacturer may have installed on any Windows computers to be used in the ClearCount system. These include programs of various types, including temporary subscriptions to third-party antivirus software.

#### On a Windows 7 system

To remove unwanted programs from a Windows 8.1 Pro system:

1. From the Windows **Start** menu, select **Control Panel**.
2. In the **Adjust your computer's settings** screen, in the **Programs** area, click **Uninstall a program**.
3. Click the program you want to remove to select it, and then click **Uninstall**. Follow any uninstall instructions that appear for that specific program.
4. Repeat step 3 for each program you want to uninstall.
5. Close the **Control Panel**.

### On a Windows 8.1 Pro system

To remove unwanted programs from a Windows 8.1 Pro system:

1. From the **Start** page, search for control.
2. From the search results, select **Control Panel**.
3. In the **Adjust your computer's settings** screen, click **Programs and Features**.
4. Click the program you want to remove to select it, and then click **Uninstall**. Follow any uninstall instructions that appear for that specific program.
5. Repeat step 3 for each program you want to uninstall.
6. Close the **Control Panel**.

## 3.4 Disabling wireless Internet access

You must permanently disable the wireless network card on any computer being used in the ClearCount system. The details on how to do this may vary depending upon the make and model of computer, but typically it consists of disabling the network adapter in the Windows Device Manager and then turning off the WLAN AutoConfig service in **Administrative Tools > Services**. For more information, consult your hardware documentation.

## 3.5 Installing ScandAll PRO

ScandAll PRO, the Fujitsu image-scanning software, is described in these documents:

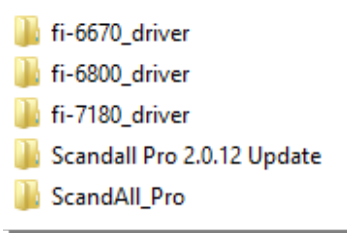
**Table 3-1. ScandAll PRO documentation**

Document title	File name
ScandAll PRO v2.x Readme	pro-v2-readme.pdf
ScandAll PRO V2.0 User's Guide	P2WW-2860-03enzo.pdf

To install ScandAll Pro:

1. Log into the ScanStation computer as the Windows administrator.
2. Load the provided ScanStation software DVD.

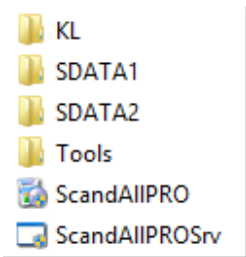
DVD contents appear in the right pane of the **Explorer** window.



**Figure 3-1. Contents of ScanStation software DVD**

3. Double-click the **ScandAll\_Pro** folder.

Folder contents appear in the right pane of the **Explorer** window.



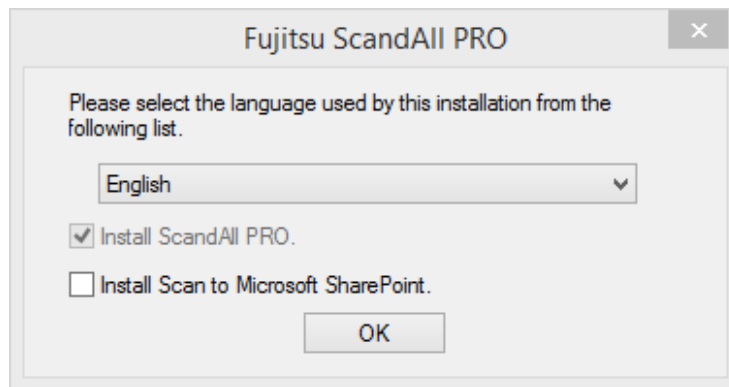
**Figure 3-2. Contents of ScandAll\_Pro folder**

4. Double-click the **ScandAllPRO** executable.

The **User Access Control** dialog appears (*Do you want to allow the following program to make changes to this computer?*).

5. Click **Yes**.

The language selection dialog for the installation procedure appears.



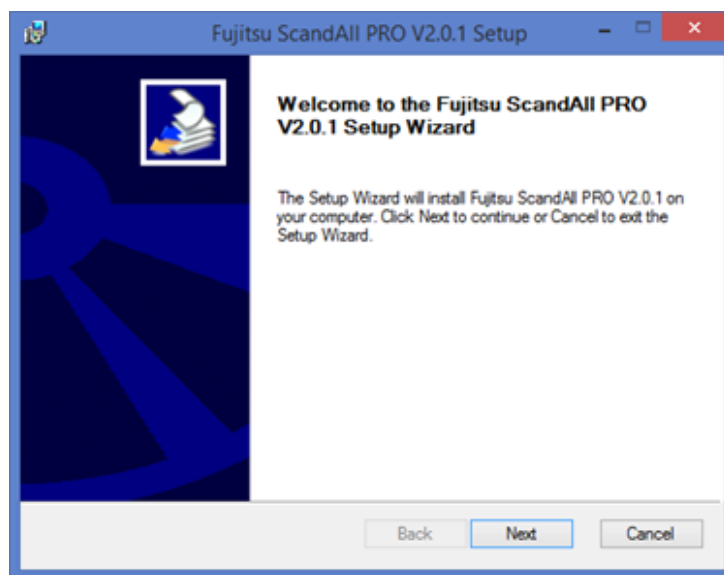
**Figure 3-3. Language selection dialog**



Do *not* select **Install Scan to Microsoft SharePoint**.

6. Click **OK**.

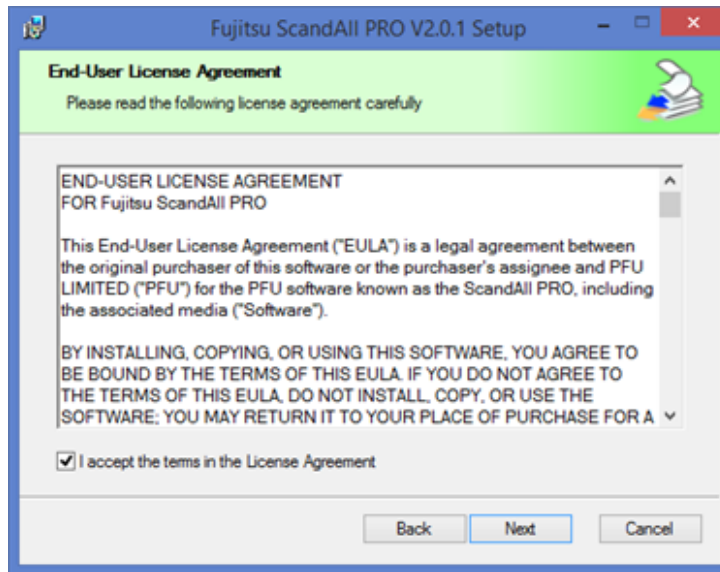
The **ScandAll PRO V2.0.1 Setup Wizard** opens at the **Welcome** screen.



**Figure 3-4. ScandAll PRO V2.0.1 Setup Wizard, Welcome screen**

7. Click **Next**.

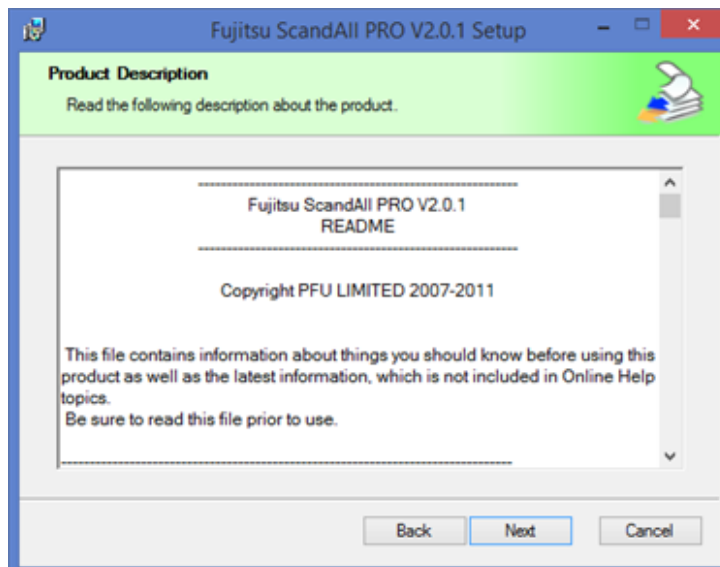
The **End-User License Agreement** screen appears.



**Figure 3-5. ScandAll PRO V2.0.1 Setup Wizard, End-User License Agreement screen**

8. Select **I accept the terms of the License Agreement** and click **Next**.

The **Product Description** screen appears.

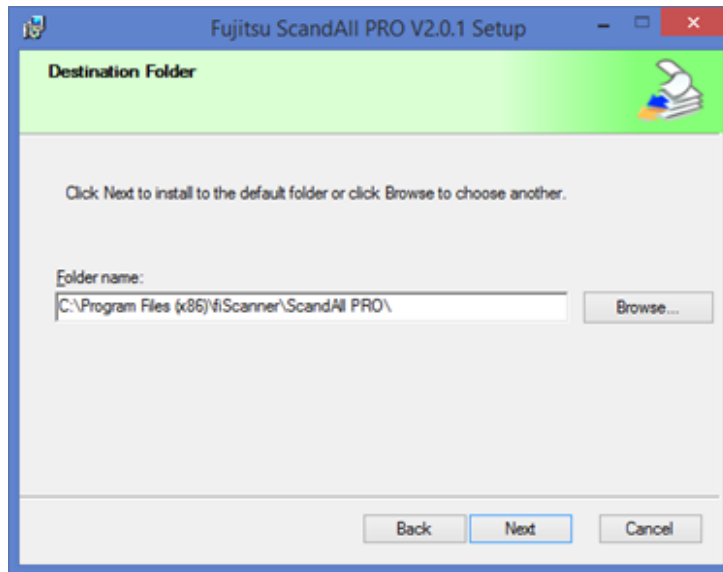


**Figure 3-6. ScandAll PRO V2.0.1 Setup Wizard, Product Description screen**



9. Peruse the **Readme** and click **Next**.

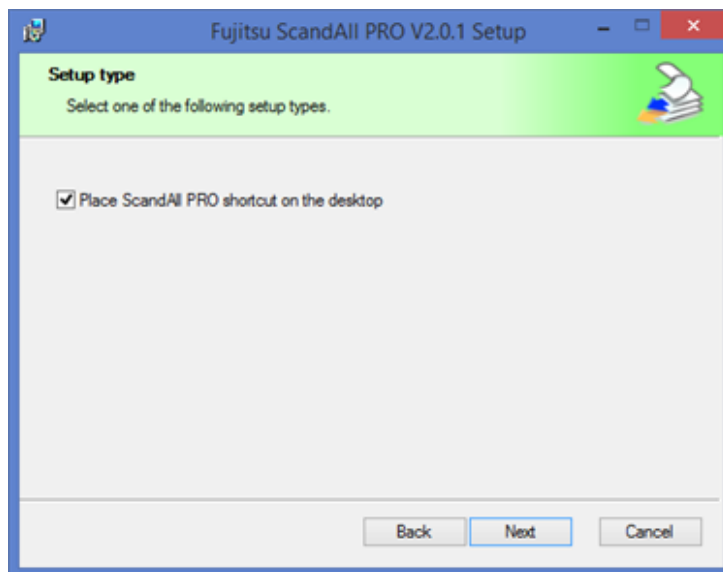
The **Destination Folder** screen appears.



**Figure 3-7. ScandAll PRO V2.0.1 Setup Wizard, Destination Folder screen**

10. Click **Next**.

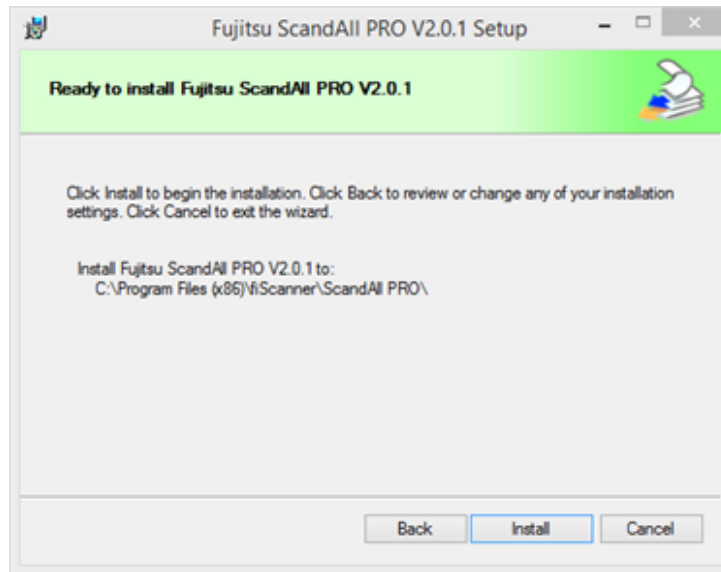
The **Setup type** screen appears.



**Figure 3-8. ScandAll PRO V2.0.1 Setup Wizard, Setup type screen**

11. Click **Next**.

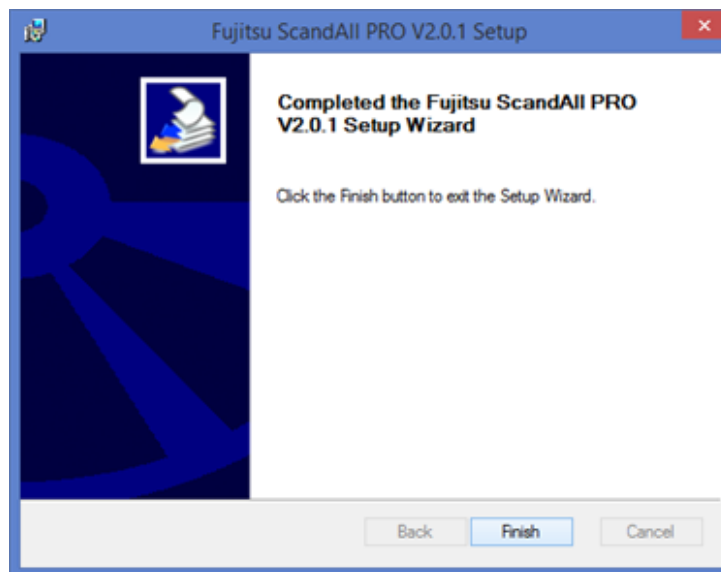
The **Ready to install** screen appears.



**Figure 3-9. ScandAll PRO V2.0.1 Setup Wizard, Ready to Install screen**

12. Click **Install** and wait as the installation progresses.

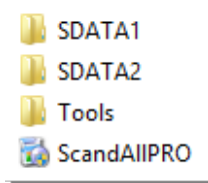
The **Completed** screen appears.



**Figure 3-10. ScandAll PRO V2.0.1 Setup Wizard, Completed screen**

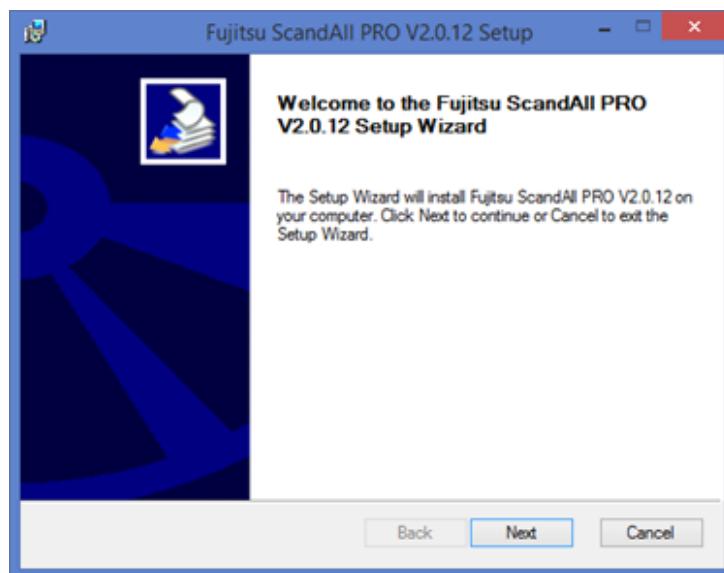
13. Click **Finish**.
14. Browse back to the top-level folder of the ScanStation software DVD.

15. Double-click the **ScandAll Pro 2.0.12 Update** folder.  
Folder contents appear in the right pane of the **Explorer** window.



**Figure 3-11. Contents of ScandAll Pro V2.0.12 Update folder**

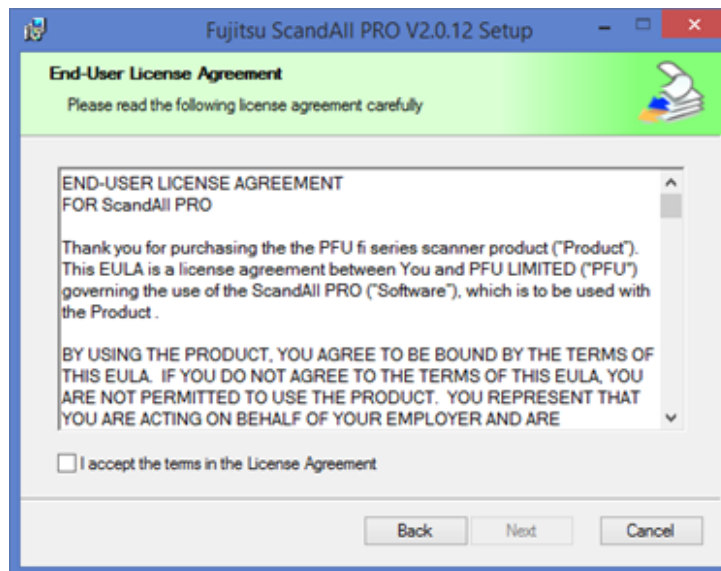
16. Double-click the **ScandAllPRO** executable.  
The **User Access Control** dialog reappears (see step 4).
17. Click **OK**.  
The **ScandAll PRO V2.0.12 Setup Wizard** opens at the **Welcome** screen.



**Figure 3-12. ScandAll PRO V2.0.12 Setup Wizard, Welcome screen**

18. Click **Next**.

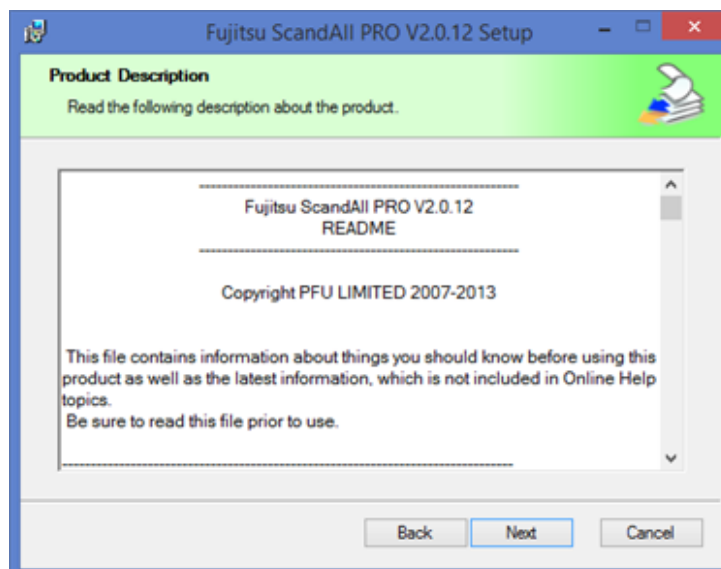
The **End-User License Agreement** screen appears.



**Figure 3-13. ScandAll PRO V2.0.12 Setup Wizard, End-User License Agreement screen**

19. Select **I accept the terms of the License Agreement** and click **Next**.

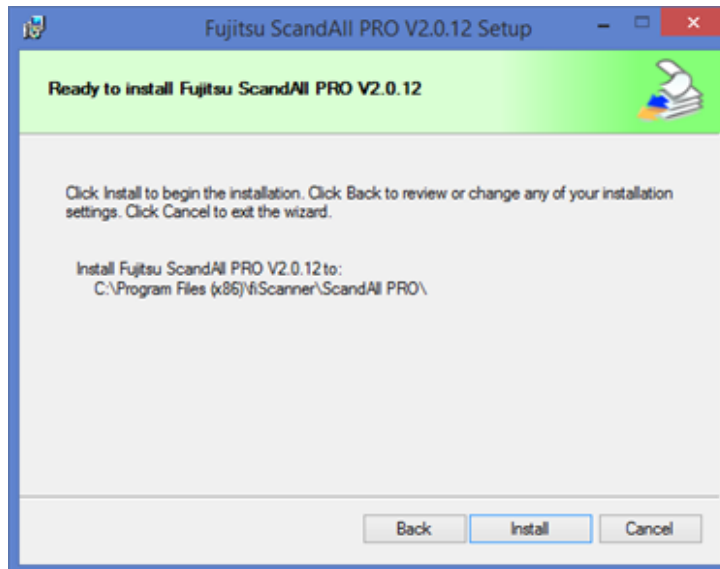
The **Product Description** screen appears.



**Figure 3-14. ScandAll PRO V2.0.12 Setup Wizard, Product Description screen**

20. Peruse the **Readme** and click **Next**.

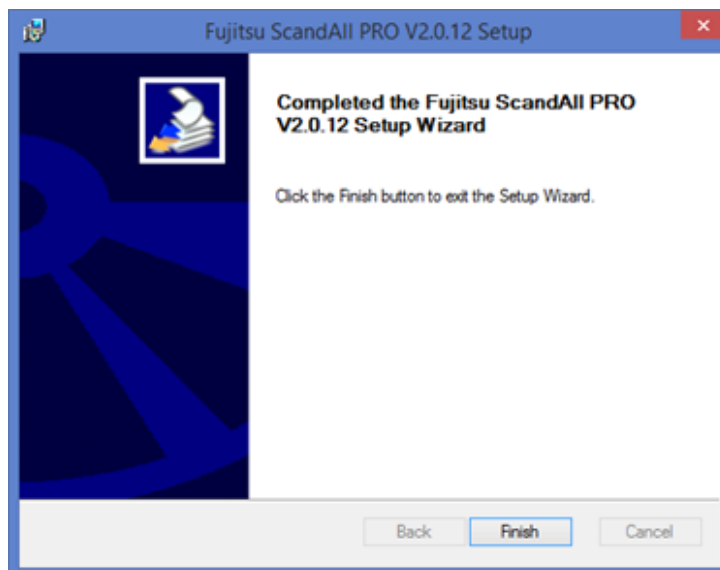
The **Ready to install** screen appears.



**Figure 3-15. ScandAll PRO V2.0.12 Setup Wizard, Ready to Install screen**

21. Click **Install** and wait as the installation progresses.

The **Completed** screen appears.



**Figure 3-16. ScandAll PRO V2.0.12 Setup Wizard, Completed screen**

22. Click **Finish**.

23. Remove and secure the ScanStation software DVD.

### 3.6 Installing the Fujitsu TWAIN driver

A Fujitsu scanner model-specific TWAIN driver is required for communication between the ScanStation computer and the scanner. Choices include:

- [fi-6670](#)
- [fi-6800](#)
- [fi-7180](#)



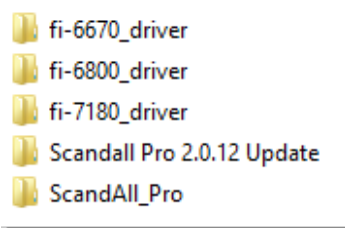
The choice of driver required depends on the scanner model in use. Exactly *one* Fujitsu TWAIN driver can be installed at a time on any ScanStation computer.

#### 3.6.1 Installing the Fujitsu fi-6670 TWAIN driver

To install the Fujitsu fi-6670 TWAIN driver:

1. Ensure the scanner is turned off.
2. Log into the ScanStation computer as the Windows administrator.
3. (If necessary) Uninstall the current TWAIN driver.
4. Load the provided ScanStation software DVD.

DVD contents appear in the right pane of the **Explorer** window.



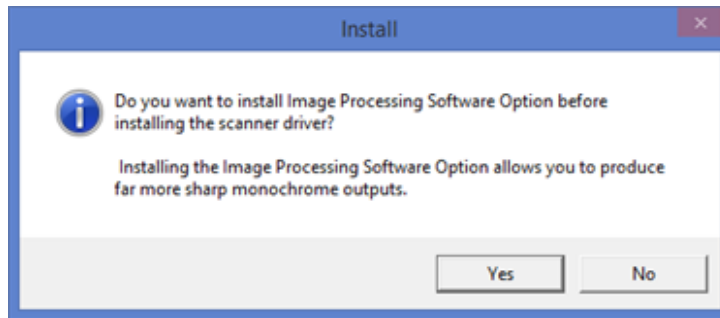
**Figure 3-17. Contents of ScanStation software DVD**

5. Browse to the location of the setup program. The path is **fi\_6670\_driver > TWAIN > 98MEZKXP**.
6. Double-click the **Setup** executable.

The **User Access Control** dialog appears (*Do you want to allow the following program to make changes to this computer?*).

7. Click **Yes**.

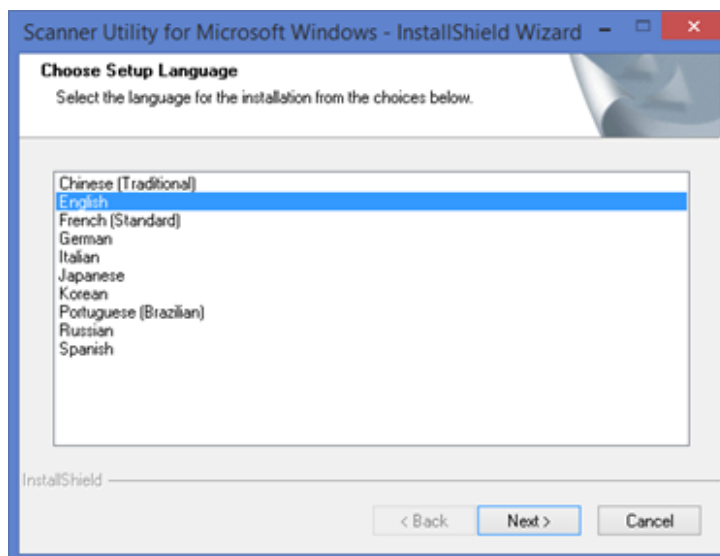
The **Image Processing Software Option** dialog appears.



**Figure 3-18. Image Processing Software Option dialog**

8. Click **No**.

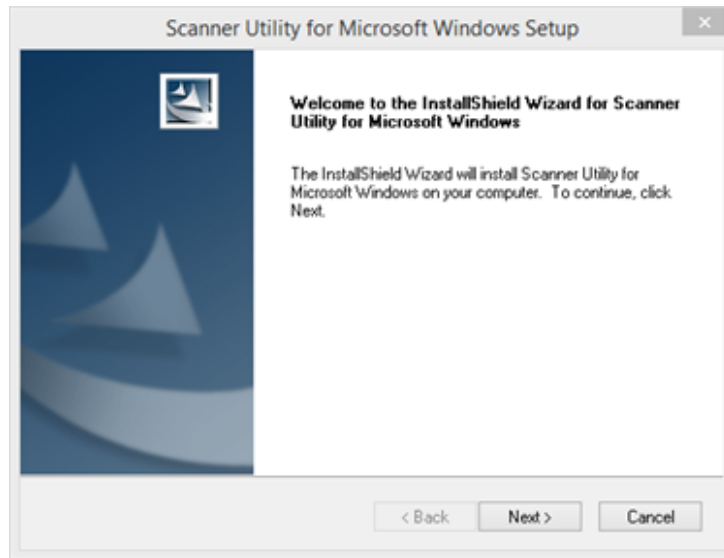
The **Scanner Utility for Microsoft Windows InstallShield Wizard** opens at the **Choose Setup Language** screen.



**Figure 3-19. Scanner Utility setup, Choose Setup Language screen**

9. Click **Next**.

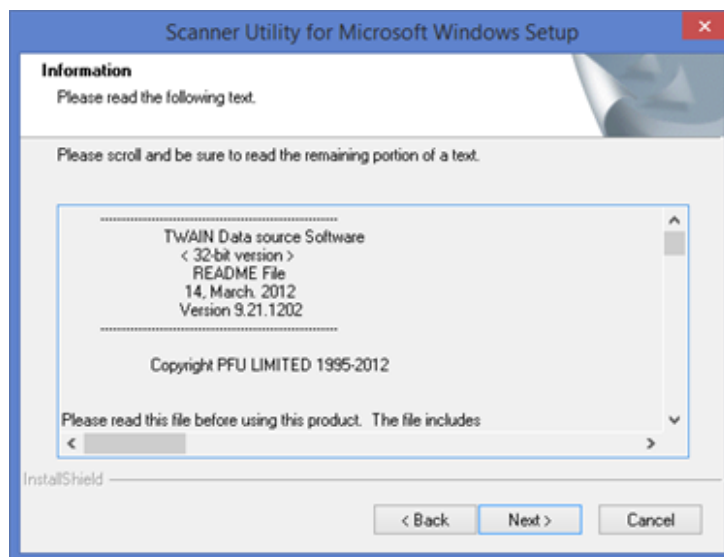
The **Welcome** screen appears.



**Figure 3-20. Scanner Utility setup, Welcome screen**

10. Click **Next**.

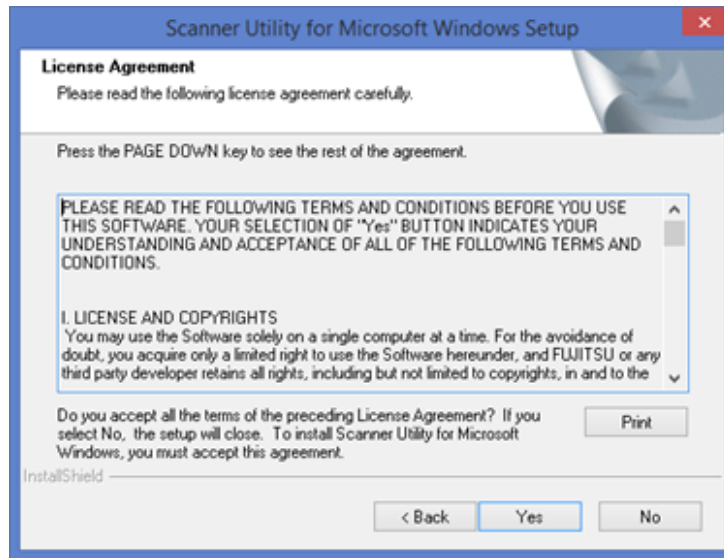
The **Information** screen appears.



**Figure 3-21. Scanner Utility setup, Information screen (fi-6670)**

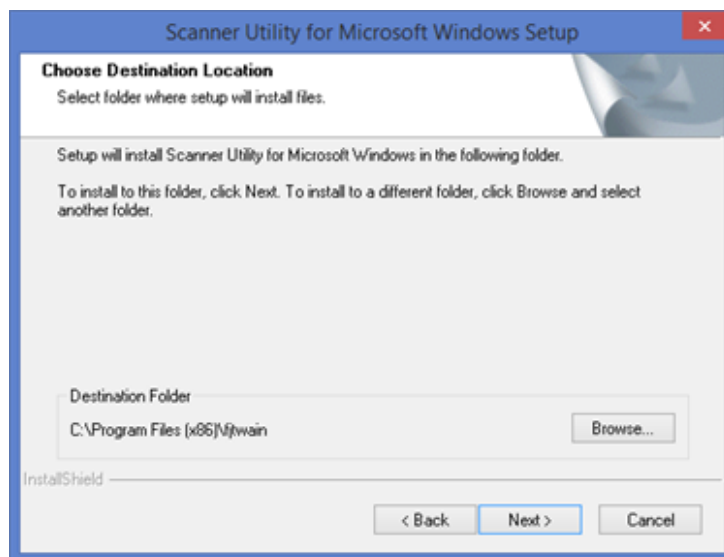


11. Peruse the **README file** in the scrolling window and click **Next**.  
The **License Agreement** screen appears.



**Figure 3-22. Scanner Utility setup, License Agreement screen**

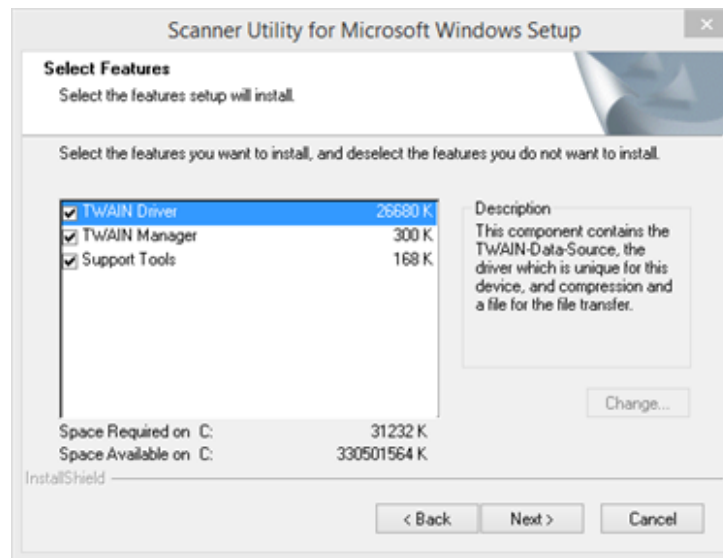
12. Click **Yes**.  
The **Choose Destination Location** screen appears.



**Figure 3-23. Scanner Utility setup, Choose Destination Location screen**

13. Click **Next**.

The **Select Features** screen appears.



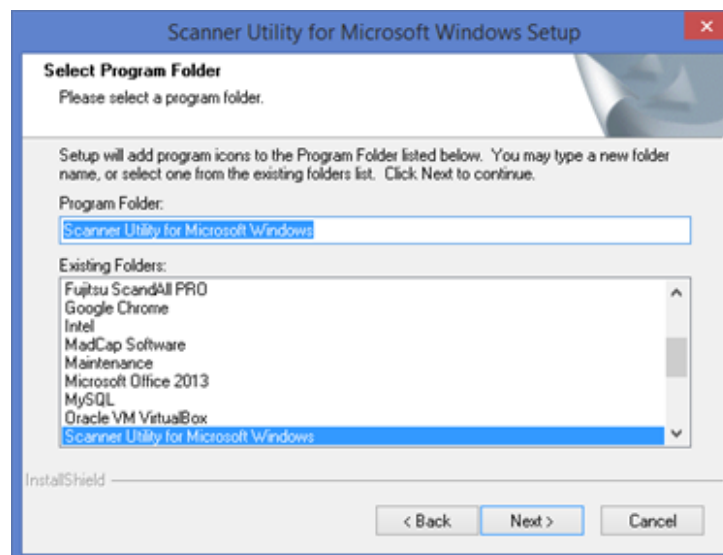
**Figure 3-24. Scanner Utility setup, Select Features screen**

14. Ensure **TWAIN Driver**, **TWAIN Manager**, and **Support Tools** are selected, and click **Next**.



The space requirements should be non-zero. If they are not, another TWAIN driver is installed and must be uninstalled.

The **Select Program Folder** screen appears.



**Figure 3-25. Scanner Utility setup, Select Program Folder screen**

15. Click **Next**.

The **Start Copying Files** screen appears.

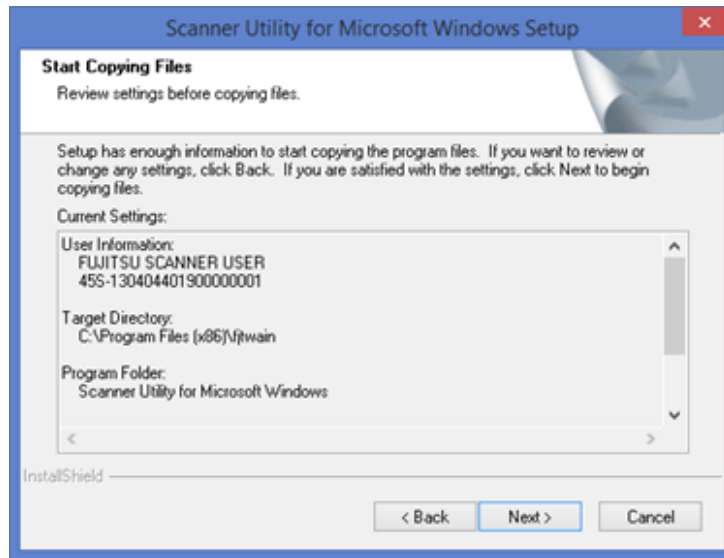


Figure 3-26. Scanner Utility setup, Start Copying Files screen

16. Click **Next**.

The **Setup Status** screen appears; it has an active progress bar that flashes green as installation proceeds. After several minutes, the **InstallShield Wizard Complete** screen appears.

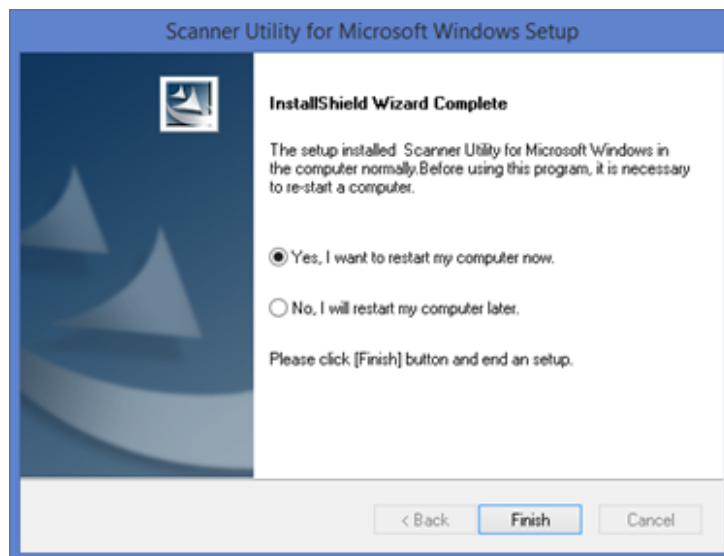


Figure 3-27. Scanner Utility setup, InstallShield Wizard Complete screen

17. Ensure **Yes, I want to restart my computer now** is selected and click **Finish**.

The computer shuts down and restarts.

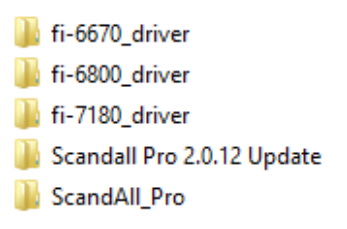
18. Remove and secure the ScanStation software DVD.

### 3.6.2 Installing the Fujitsu fi-6800 TWAIN driver

To install the Fujitsu fi-6800 TWAIN driver:

1. Ensure the scanner is turned off.
2. Log into the ScanStation computer as the Windows administrator.
3. (If necessary) Uninstall the current TWAIN driver.
4. Load the provided ScanStation software DVD.

DVD contents appear in the right pane of the **Explorer** window.



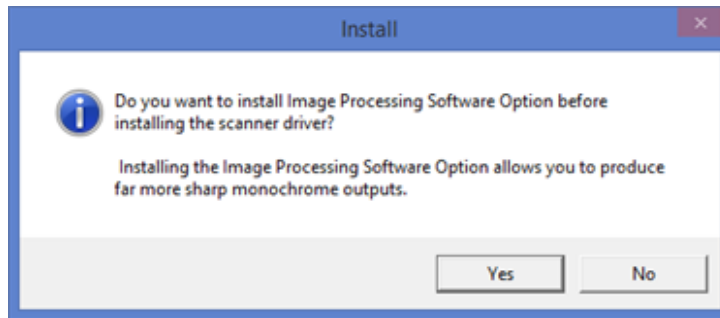
**Figure 3-28. Contents of ScanStation software DVD**

5. Browse to the location of the setup program. The path is **fi\_6800\_driver > TWAIN > 98MEZKXP**.
6. Double-click the **Setup** executable.

The **User Access Control** dialog appears (*Do you want to allow the following program to make changes to this computer?*).

7. Click **Yes**.

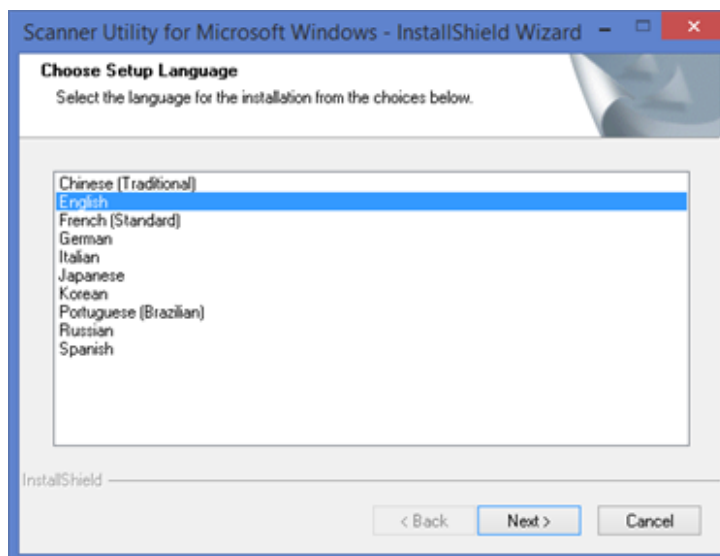
The **Image Processing Software Option** dialog appears.



**Figure 3-29. Image Processing Software Option dialog**

8. Click **No**.

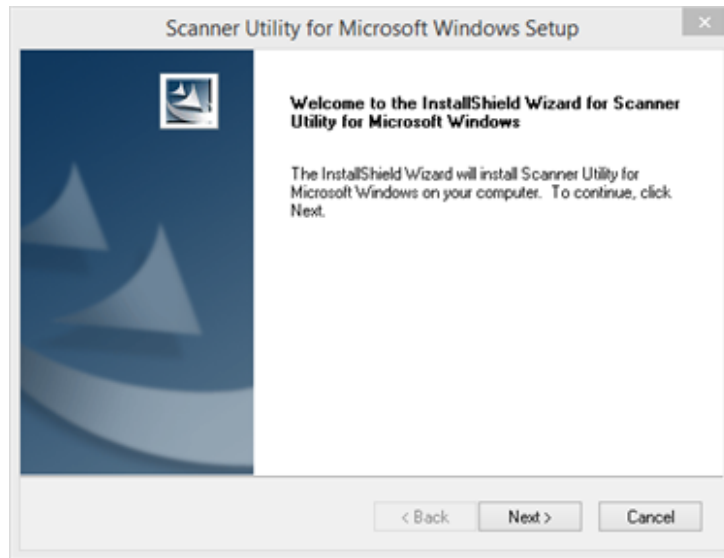
The **Scanner Utility for Microsoft Windows InstallShield Wizard** opens at the **Choose Setup Language** screen.



**Figure 3-30. Scanner Utility setup, Choose Setup Language screen**

9. Click **Next**.

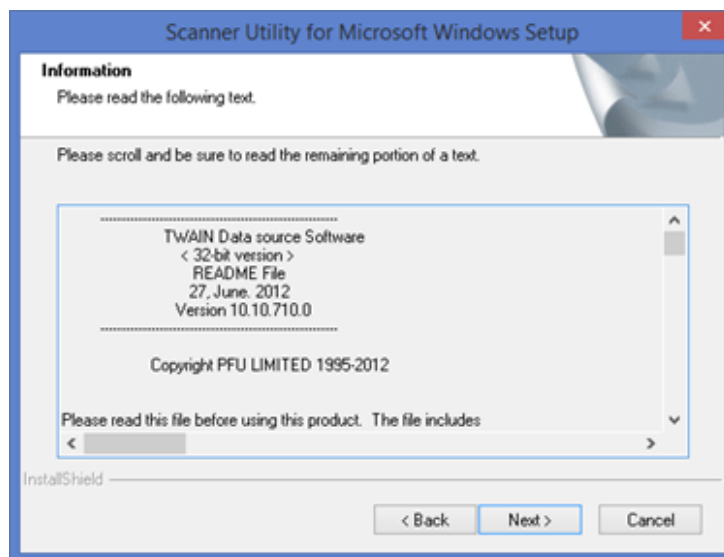
The **Welcome** screen appears.



**Figure 3-31. Scanner Utility setup, Welcome screen**

10. Click **Next**.

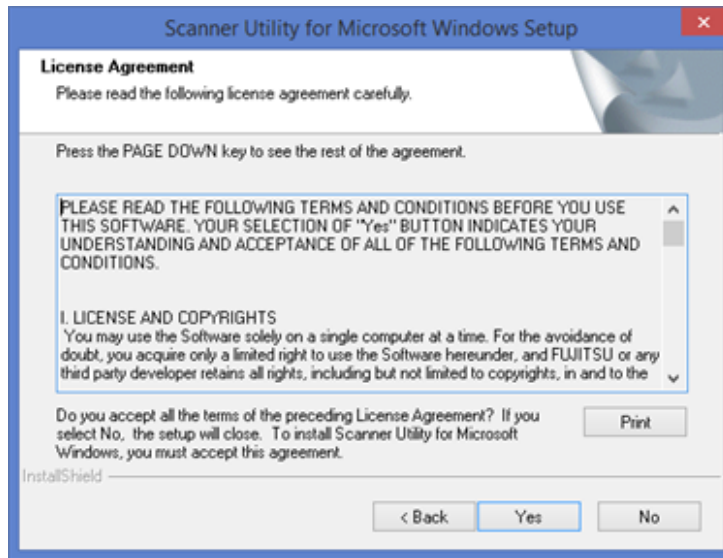
The **Information** screen appears.



**Figure 3-32. Scanner Utility setup, Information screen (fi-6800)**

11. Peruse the **README file** in the scrolling window and click **Next**.

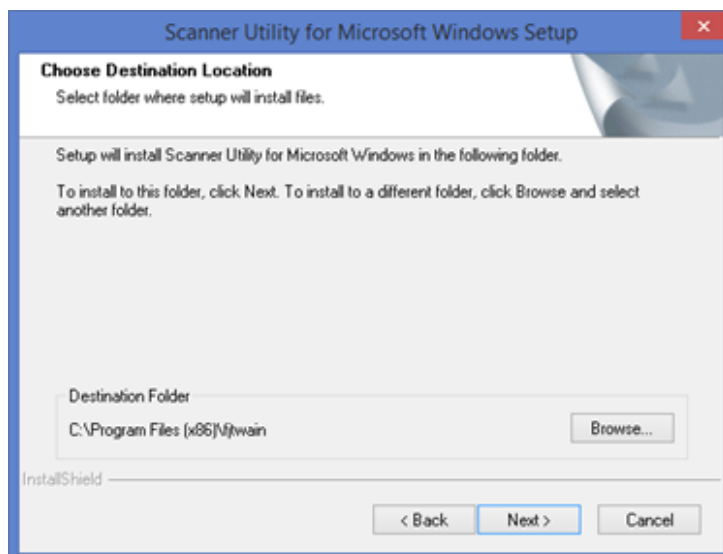
The **License Agreement** screen appears.



**Figure 3-33. Scanner Utility setup, License Agreement screen**

12. Click **Yes**.

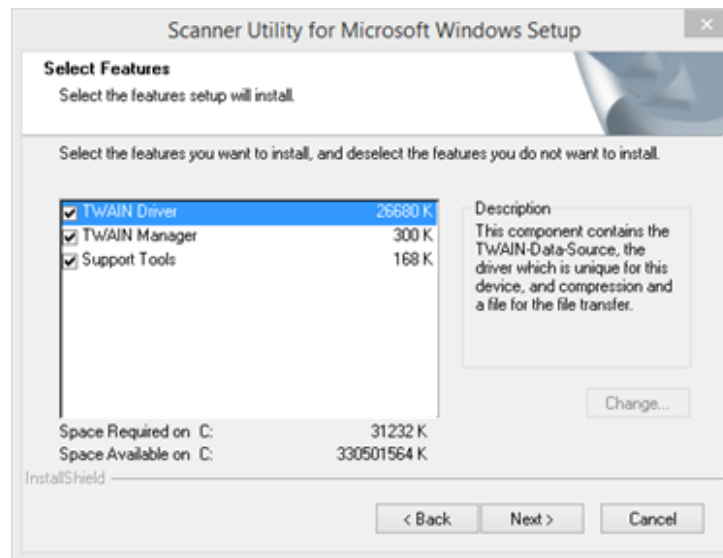
The **Choose Destination Location** screen appears.



**Figure 3-34. Scanner Utility setup, Choose Destination Location screen**

13. Click **Next**.

The **Select Features** screen appears.



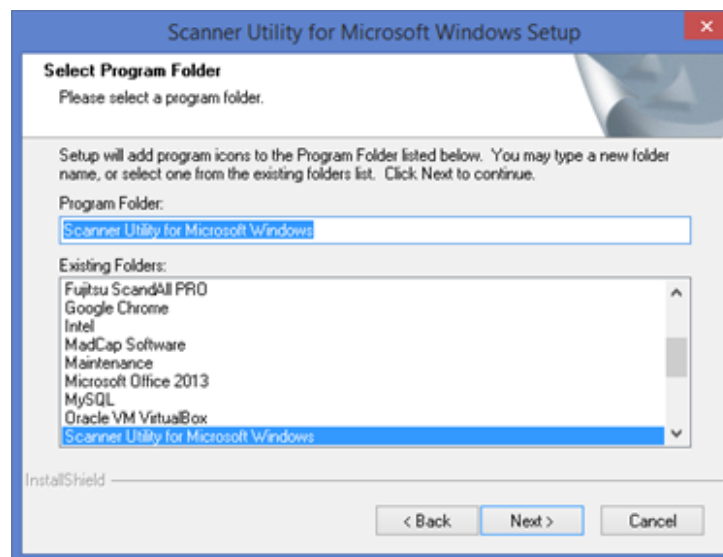
**Figure 3-35. Scanner Utility setup, Select Features screen**

14. Ensure **TWAIN Driver**, **TWAIN Manager**, and **Support Tools** are selected, and click **Next**.



The space requirements should be non-zero. If they are not, another TWAIN driver is installed and must be uninstalled.

The **Select Program Folder** screen appears.



**Figure 3-36. Scanner Utility setup, Select Program Folder screen**



15. Click **Next**.

The **Start Copying Files** screen appears.

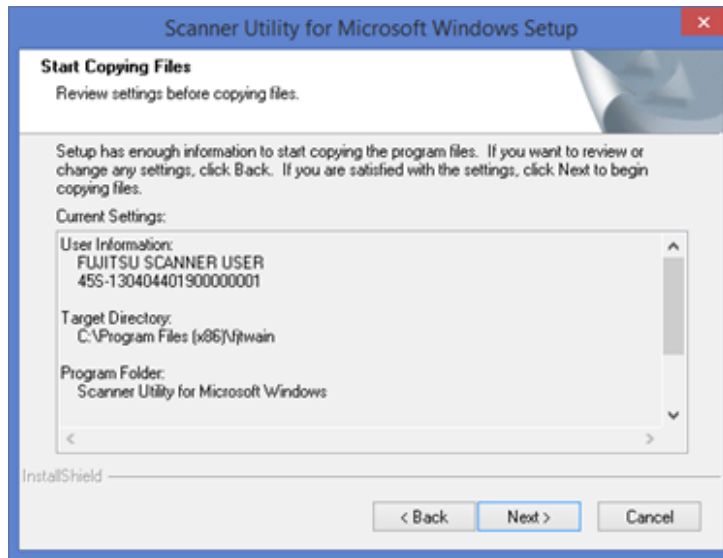


Figure 3-37. Scanner Utility setup, Start Copying Files screen

16. Click **Next**.

The **Setup Status** screen appears; it has an active progress bar that flashes green as installation proceeds. After several minutes, the **InstallShield Wizard Complete** screen appears.

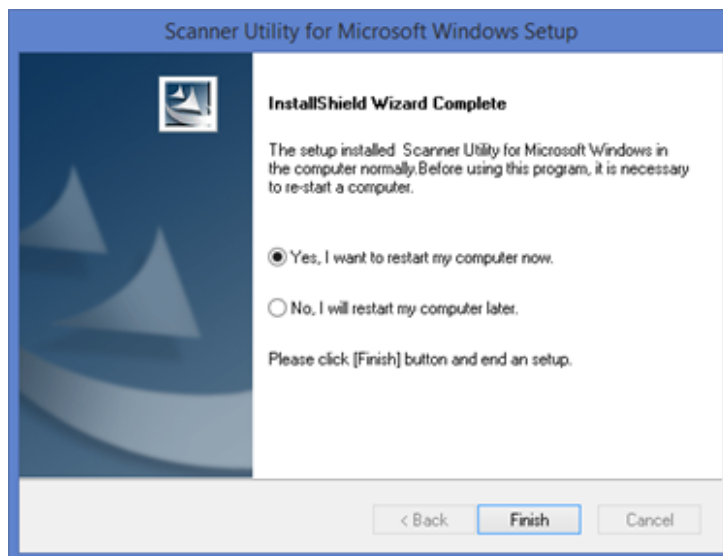


Figure 3-38. Scanner Utility setup, InstallShield Wizard Complete screen

17. Ensure **Yes, I want to restart my computer now** is selected and click **Finish**.

The computer shuts down and restarts.

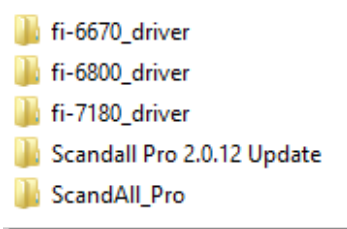
18. Remove and secure the ScanStation software DVD.

### 3.6.3 Installing the Fujitsu fi-7180 TWAIN driver

To install the Fujitsu fi-7180 TWAIN driver:

1. Ensure the scanner is turned off.
2. Log into the ScanStation computer as the Windows administrator.
3. (If necessary) Uninstall the current TWAIN driver.
4. Load the provided ScanStation software DVD.

DVD contents appear in the right pane of the **Explorer** window.



**Figure 3-39. Contents of ScanStation software DVD**

5. Browse to the location of the setup program. The path is **fi\_7180\_driver > 02- PSIPTWAIN 1.4**.
6. Double-click the **Setup** executable.

The **User Access Control** dialog appears (*Do you want to allow the following program to make changes to this computer?*).

7. Click **Yes**.

The **fi Series Setup** utility opens at the **Welcome** screen.

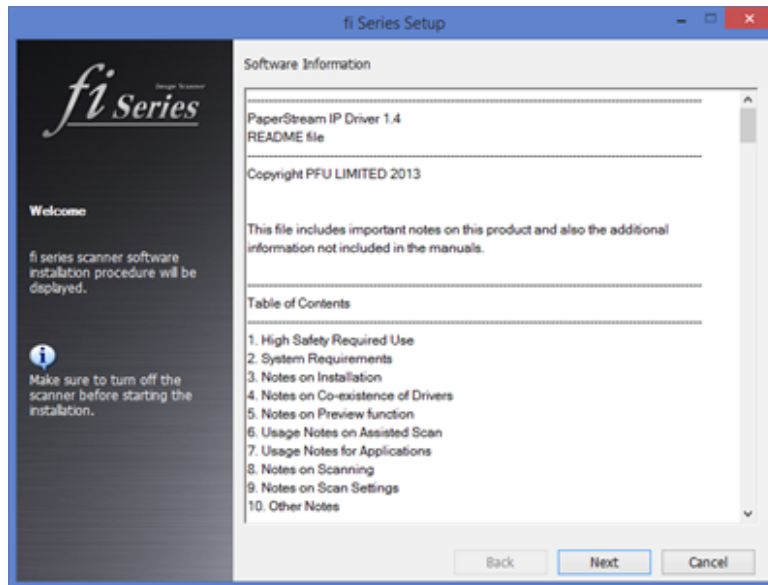


Figure 3-40. fi Series Setup utility, Welcome/Software Information screen

8. Peruse the **README file** in the scrolling window and click **Next**.

The **Select Software** screen appears.

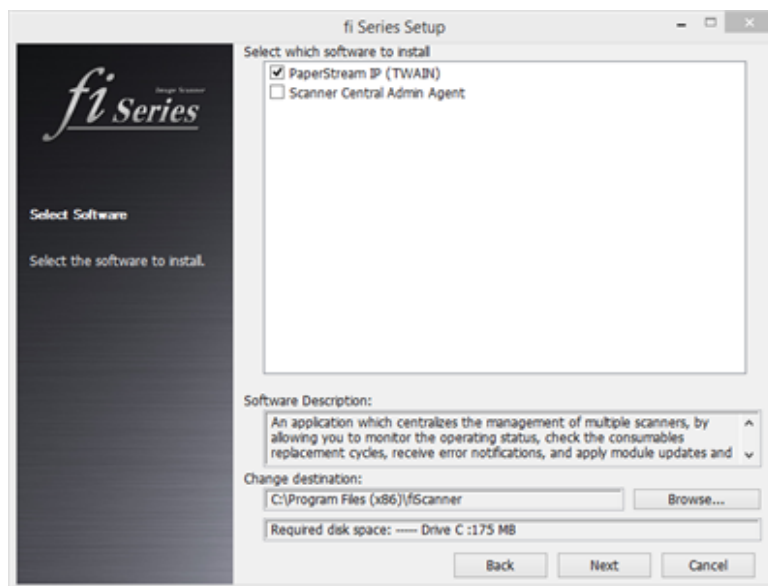


Figure 3-41. fi Series Setup utility, Select Software screen

9. Ensure that **PaperStream IP (TWAIN)** is selected and that **Scanner Central Admin Agent** is *not* selected, and click **Next**.

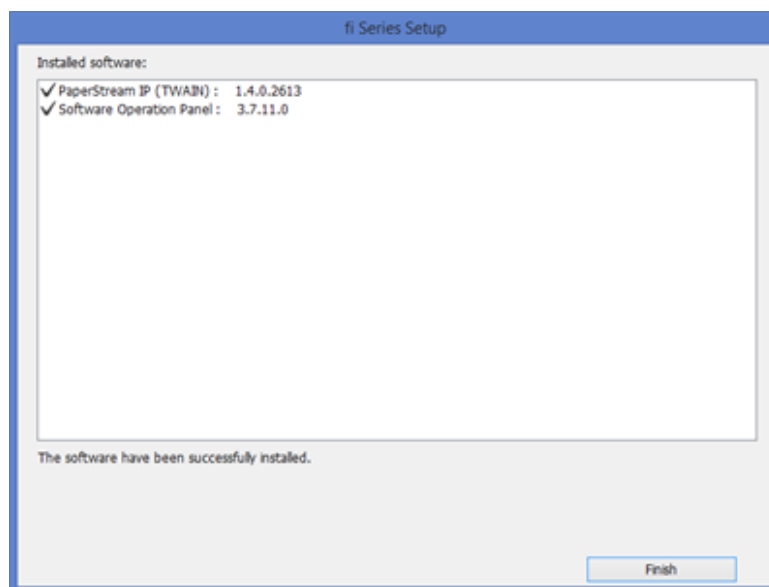
The **License Agreement** screen appears.



**Figure 3-42. fi Series Setup utility, License Agreement screen**

10. Select **I accept the terms of license agreements for each software to be installed** and click **Next**.

The installation screen appears; it has an active progress bar that flashes green as installation proceeds. Upon successful completion, the progress bar disappears and the PaperStream IP (TWAIN) and Software Operation Panel modules are both checked.



**Figure 3-43. fi Series Setup utility, installation screen (on completion)**

11. Click **Finish**.
12. Remove and secure the ScandAll PRO DVD.

### 3.6.4 Installing the Fujitsu Scanner Error Recovery Guide

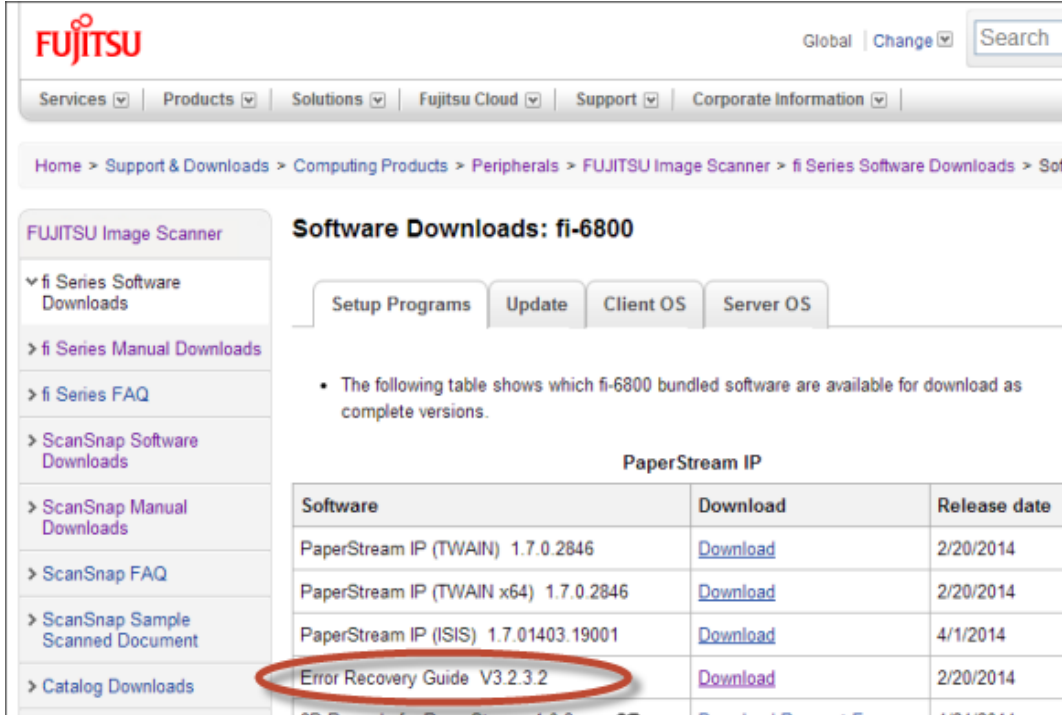
Fujitsu distributes an online **Error Recovery Guide** for each of its scanner models. A pop-up link to the guide appears whenever a scanner error occurs. There must be a local copy on each of the ScanStation computers. You must either install the guide with the scanner driver software, or download it from the Fujitsu website.

To download the guide:

1. From a computer outside the ClearCount network, browse to <http://www.fujitsu.com/global/support/computing/peripheral/scanners/drivers/>.  
The **fi Series Software Download** page appears.
2. Select the tab for your scanner model.
3. Browse the available options to select **Error Recovery Guide**.

4. Click **Download**.
5. Copy the downloaded file to removable media for distribution to ScanStation computers.

The following figure shows the download site for the **Error Recovery Guide** for the fi-6800 scanner:



The screenshot shows the Fujitsu website's 'Software Downloads: fi-6800' page. On the left is a navigation menu with links like 'fi Series Software Downloads', 'fi Series Manual Downloads', 'fi Series FAQ', 'ScanSnap Software Downloads', 'ScanSnap Manual Downloads', 'ScanSnap FAQ', 'ScanSnap Sample Scanned Document', and 'Catalog Downloads'. The main content area has tabs for 'Setup Programs', 'Update', 'Client OS', and 'Server OS'. Below these tabs, a text block states: 'The following table shows which fi-6800 bundled software are available for download as complete versions.' This is followed by a table titled 'PaperStream IP'.

Software	Download	Release date
PaperStream IP (TWAIN) 1.7.0.2846	<a href="#">Download</a>	2/20/2014
PaperStream IP (TWAIN x64) 1.7.0.2846	<a href="#">Download</a>	2/20/2014
PaperStream IP (ISIS) 1.7.01403.19001	<a href="#">Download</a>	4/1/2014
Error Recovery Guide V3.2.3.2	<a href="#">Download</a>	2/20/2014

Figure 3-44. Downloading the Fujitsu Scanner Error Recovery Guide

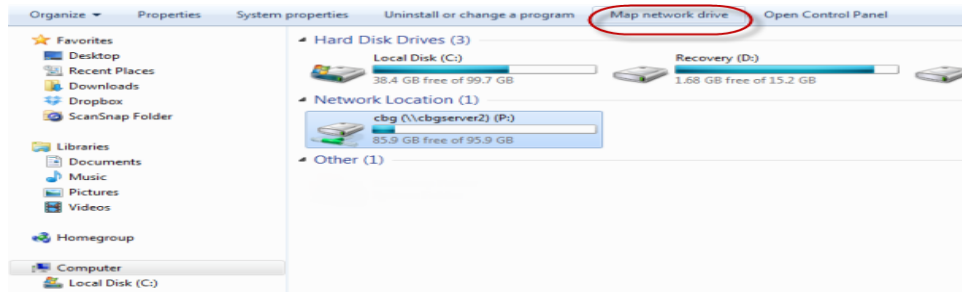
### 3.7 Mapping the ScanStation to the ScanServer

All of the ClearCount software resides on the ScanServer. It is necessary to connect each ScanStation to the ScanServer through the router so the necessary files can be shared. For details, see Setting up the scanning location on page 112.

### On a Windows 7 system

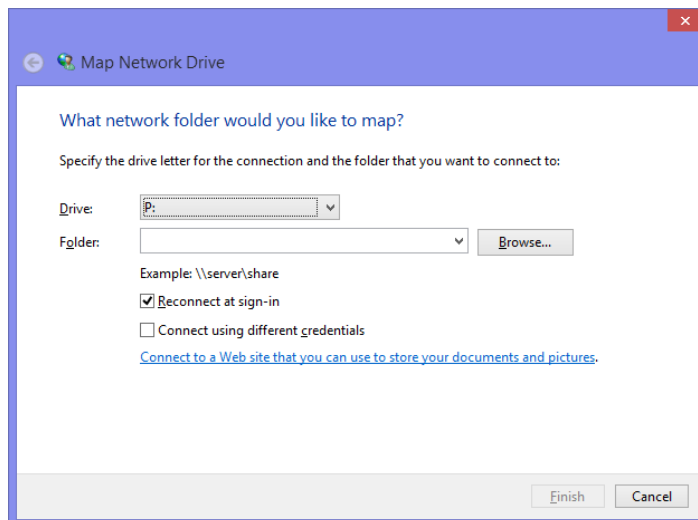
To map the ScanStation to the ScanServer on a Windows 7 system:

1. Log in to the ScanStation computer as the Windows administrator.
2. In **Windows Explorer**, select the **C:** drive and click **Map network drive**.



**Figure 3-45. Map network drive selection**

3. In the **Map Network Drive** dialog, select the P: drive.



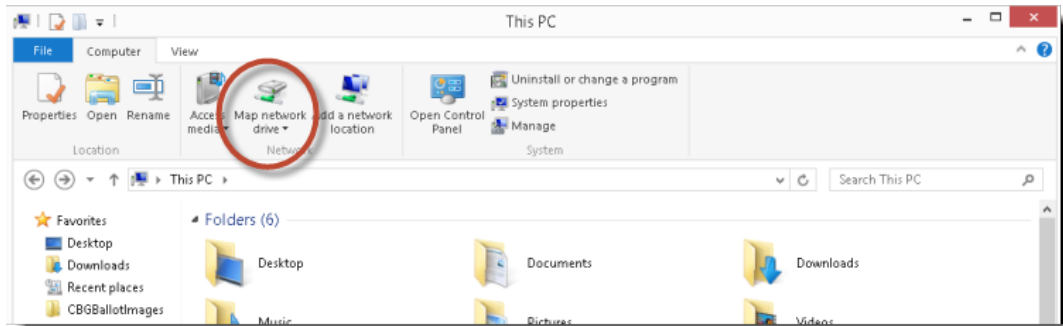
**Figure 3-46. Map Network Drive dialog**

4. In the Folder section, click **Browse** and then browse to the ScanServer (**\\ScanServer\_Name\client**).
5. Ensure **Reconnect at logon** is checked.
6. Click **Finish**.

### On a Windows 8.1 Pro system

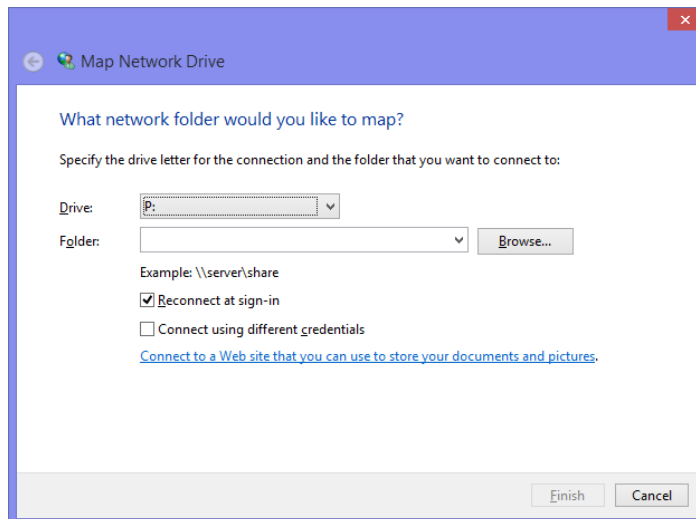
To map the ScanStation to the ScanServer on a Windows 8.1 Pro system:

1. Log in to the ScanStation computer as the Windows administrator.
2. In the **File Explorer**, navigate to the top level (**This PC**).
3. From the **Computer** tab, click **Map network drive** to open the menu, and then click **Map network drive**.



**Figure 3-47. Map network drive selection**

4. Select the P: drive.



**Figure 3-48. Map Network Drive dialog**

5. In the Folder section, click **Browse** and then browse to the ScanServer (\\ScanServer\_Name\client).
6. Ensure **Reconnect at logon** is checked.
7. Click **Finish**.



### 3.8 Creating a desktop shortcut to the P: drive

For the sake of convenience, you can create a desktop shortcut to the P: drive, which holds these commonly-used ClearCount programs:

- StartTabulator.cmd
- BallotDeleteBox.exe
- Update scripts for different scanner models and ballot sizes.



This drive also holds some system files that must *not* be opened except under the direction of Clear Ballot service personnel.

#### On a Windows 7 system

To create a shortcut to the P: drive on a Windows 7 system:

1. Log in to the ScanStation computer as the Windows administrator.
2. From **Windows Explorer**, right-click the P: drive.
3. Right-click the file, and click **Create shortcut**.
4. In the **Shortcut information box**, click **Yes**.

A shortcut to the file appears on the desktop.

#### On a Windows 8.1 Pro system

To create a shortcut to the P: drive on a Windows 8.1 Pro system:

1. Log in to the ScanStation computer as the Windows administrator.
2. From **File Explorer**, navigate to the top level (**This PC**).
3. Right-click the P: drive and click **Create shortcut**.

### 3.9 Configuring the scanner as a device

To ensure the ScanStation computer recognizes the scanner, the scanner must be configured as a device.

### On a Windows 7 system

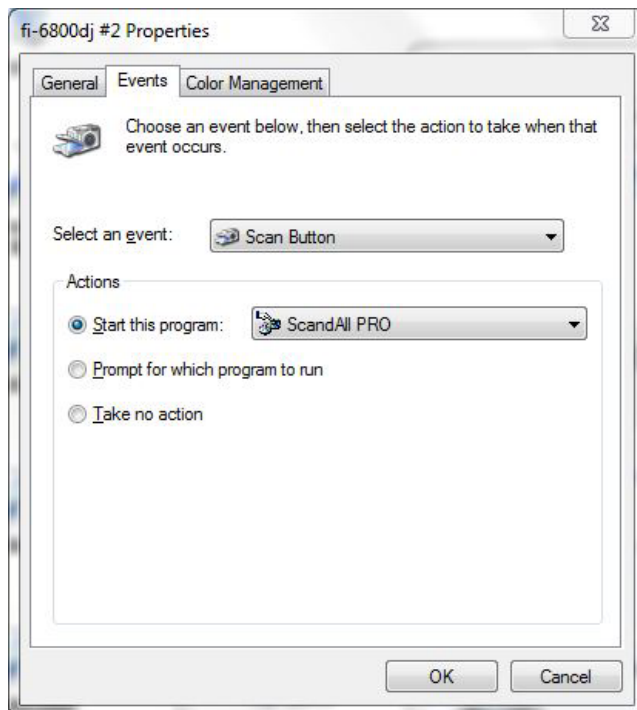
To configure the scanner as a device on a Windows 7 system:

1. Log in to the ScanStation computer as the Windows administrator.
2. From the Windows **Start** menu, select **Devices and Printers**.
3. In the **Devices and Printers** window, look for the scanner. If it appears in the **Device** list by name or model, you can close the window.

If the scanner is not listed by name or model (that is, if it appears as an unidentified device), this may mean that the scanner software needs to be reassociated with it.

To set the proper program to run when the Scan button is pressed:

1. In the **Devices and Printers** window, right-click the scanner and select **Scan Properties**.
2. Depending on the computer's settings, a **User Account Control** information box might appear. If it does, click **Yes** to allow the installation.
3. Click the **Events** tab.



**Figure 3-49. Events tab**

4. In the **Actions** box, click **Start this program** and choose **ScandAll PRO**

from the dropdown list.

5. Click **OK**.

### On a Windows 8.1 Pro system

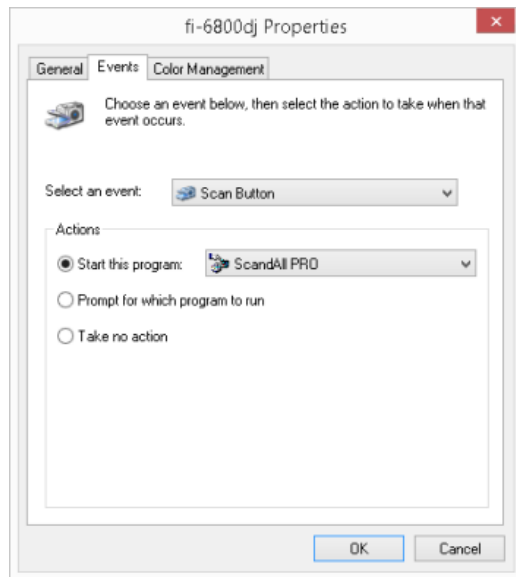
To configure the scanner as a device on a Windows 8.1 Pro system:

1. Log in to the ScanStation computer as the Windows administrator.
2. From the **Start** page, enter any letter key to launch the **Search** pane.
3. Enter **device** and then click **Devices and Printers**.
4. In the **Devices and Printers** window, look for the scanner. If it appears in the **Device** list by name or model, you can close the window.

If the scanner is not listed by name or model (that is, if it appears as an unidentified device), this may mean that the scanner software needs to be reassociated with it.

To set the proper program to run when the Scan button is pressed:

1. In the **Devices and Printers** window, right-click the scanner and select **Scan Properties**.
2. Depending on the computer's settings, a **User Account Control** information box might appear. If so, click **Yes** to allow the installation.
3. Click the **Events** tab.



**Figure 3-50. Events tab**

4. In the **Actions** box, click **Start this program** and choose **ScandAll PRO** from the dropdown list.
5. Click **OK**.

### 3.10 Running the scanner update script

A scanner update script sets the scanner profile and copies it into the directory where ScandAll PRO expects to find it. Run the update script that corresponds to the scanner model in use.

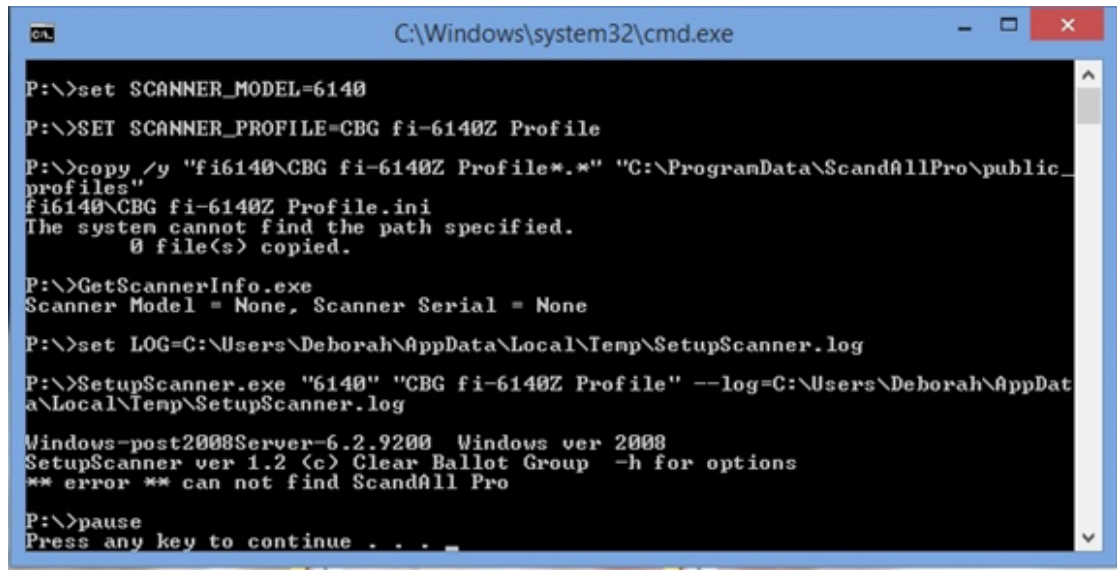


The ScanStation operator must ask an administrator who knows the administrative password for the station to run the update script. The password *must* be kept from the ScanStation operator.

To run the scanner update script on Windows 7 *or* 8 systems:

1. Log in to the ScanStation computer as the Windows administrator.
2. Double-click the desktop shortcut to the P: drive ([created by mapping the ScanStation to the ScanServer](#)).
3. Double-click the appropriate update script:
  - Update6140.bat for the fi-6140.
  - Update5950.bat for the fi-5950.
  - Update7180.bat for the fi-7180.
  - Update6670.bat for the fi-6670.
  - Update6800.bat for the fi-6800, if the ballot is less than 18 inches.
  - Update6800-18-22.bat for the fi-6800, if the ballot is between 18 and 22 inches.

4. When the script is finished, read the message to ensure the system recognizes the scanner and serial number. The following shows the fi-6800 script:



```

C:\Windows\system32\cmd.exe

P:\>set SCANNER_MODEL=6140
P:\>SET SCANNER_PROFILE=CBG fi-6140Z Profile
P:\>copy /y "fi6140\CBG fi-6140Z Profile*.*)" "C:\ProgramData\ScandAllPro\public_profiles"
fi6140\CBG fi-6140Z Profile.ini
The system cannot find the path specified.
0 file(s) copied.

P:\>GetScannerInfo.exe
Scanner Model = None, Scanner Serial = None

P:\>set LOG=C:\Users\Deborah\AppData\Local\Temp\SetupScanner.log
P:\>SetupScanner.exe "6140" "CBG fi-6140Z Profile" --log=C:\Users\Deborah\AppData\Local\Temp\SetupScanner.log

Windows-post2008Server-6.2.9200 Windows ver 2008
SetupScanner ver 1.2 (c) Clear Ballot Group -h for options
** error ** can not find ScandAll Pro

P:\>pause
Press any key to continue . . .

```

**Figure 3-51. Command window for scanner update script**

5. If the information is incorrect, try each of the following steps in order:
  - a. Turn off and restart the scanner and then rerun the script.
  - b. If (a) does not work, reboot the computer and rerun the script.
  - c. If (b) does not work, uninstall and reinstall the scanner drivers, using your Fujitsu documentation.
  - d. If none of these troubleshooting steps work, contact Clear Ballot Customer Support.

This process imports the proper profile onto the ScanStation from the ScanServer and also imports the serial number of the scanner, so the ScanStation computer/scanner combination can be identified later if issues arise.

### 3.11 Configuring ScandAll PRO

The scanner profile and event are configured in ScandAll Pro.



If you have not run the profile for a scanner model, as described in Running the scanner update script on page 68, you cannot see it in the ScandAll PRO dropdown lists. The update script must be run before ScandAll PRO is opened, or else it does not display the new profile.

To configure ScandAll PRO on Windows 7 or 8 systems:

1. Log in to the ScanStation computer as the Windows administrator.
2. Open ScandAll PRO.
3. Select the proper profile from the dropdown menu as highlighted in the following figure. The profile name matches the version of the update script used as well as the scanner model.



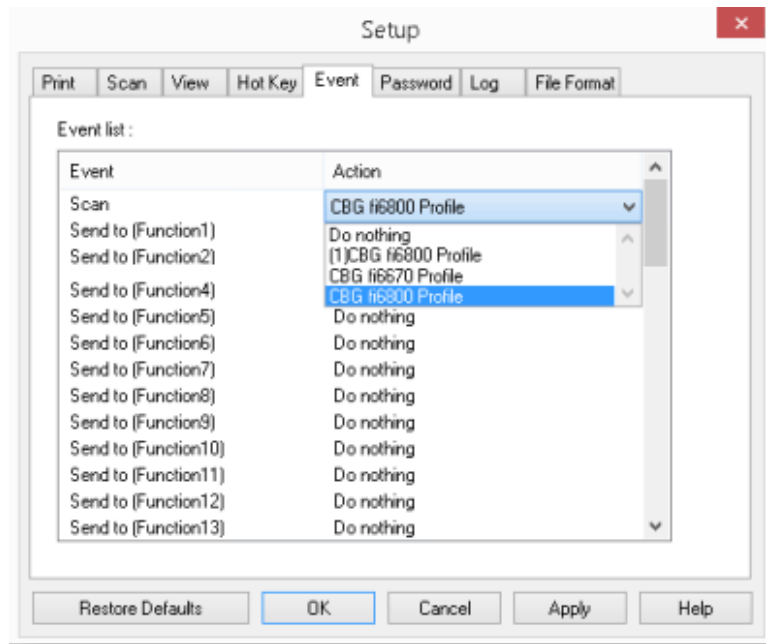
**Figure 3-52. Scanner profile selection**



If the ScanStation computer is set up to work with more than one scanner, you might have more than one profile. If you cannot select the correct profile from the dropdown menu, instead select **Scan > Select Scanner**. This opens the **Select Scanner** dialog, in which you can select the correct scanner profile.

4. From the **Tool** menu, select **Preferences**.
5. In the **Setup** editor, click the **Event** tab.

6. In the **Event** list, click the **Action** associated with the **Scan** event to access the dropdown list.



**Figure 3-53. Scanner event selection**

7. Select the profile that matches your scanner and click **OK**.
8. Exit ScandAll PRO.

## 3.12 Testing the scanner cameras

The accuracy of the system depends not only on the correctness of the election definition, but also on the proper functioning of the scanning equipment. The following test ensures the scanners' cameras accurately record the images on both sides of the ballots. This test involves the use of a calibration card and one representative ballot of the size planned for the upcoming election.

### Obtaining the calibration card

Print the two-sided calibration card at actual size (*not* fit to page) in landscape orientation from Clear Ballot's website ([www.ClearBallot.com/Support/CalibrationCard](http://www.ClearBallot.com/Support/CalibrationCard)). Depending on your browser, you may need to print using the system dialog in order obtain the landscape orientation option.

### Testing the cameras

To test the cameras, do the following for each configured scanner:

1. Log in to the ScanStation computer as the Windows administrator.
2. [Run the scanner update script.](#)
3. Run the calibration card and the representative ballot card through the scanner. This produces four JPEG (.jpg) files, one for each side of each card.
4. Open the folder C:\CBGBallotImages and examine the JPEG files that start with the prefix SEPARATOR. Look for the following:
  - Both the front and back image of the calibration card are examined for any distortion in the image. Lines should be sharp and straight. If there is distortion, contact Fujitsu to service the scanner prior to using it in the election.
  - Both the front and back image of the representative ballot are examined to ensure the entire ballot image is visible and that nothing was cropped out by the scanner. If the ballot image appears cropped, contact Clear Ballot Customer Support.
5. When the test is complete, delete the four images from C:\CBGBallotImages.

### 3.13 Setting Windows passwords

Administrative users must use a non-default password. Scanner operators are required to have a password, which is not the Windows default. All passwords are subject to Windows' complexity requirements. Tasks include:

1. [Configure the Windows password policy.](#)
2. [Change the administrative password.](#)
3. [Create the non-administrative user.](#)
4. [Set up the non-administrative user.](#)



Prior to assigning passwords to individuals, give consideration to who has the administrator password and which persons have a scanner operator password.



### 3.13.1 Configuring the Windows password policy

To configure the password policy on Windows computers:

1. Log in to the ScanStation computer as the Windows administrator.
2. Access the Group Policy Editor:

#### On a Windows 7 system

- a. Click the **Start** button.
- b. In **Search programs and files**, enter gpedit.msc.
- c. In the search results, click **gpedit**.

#### On a Windows 8.1 Pro system

From the **Start** page, enter gpedit.msc and then click **gpedit** in the search results.

3. From the left pane, select **Computer Configuration > Windows Settings > Security Settings > Account Policies**.
4. Click to open **Account Policies**.
5. Select **Password Policy**.
6. Within the Password Policies options displayed on the right, double-click **Minimum Password Length**.
7. Set the length to 8 characters and press **OK**.
8. Within the **Password Policies** options displayed on the right, double-click **Password must meet complexity requirements**.
9. Set to **Enabled** and press **OK**.
10. Close the Group Policy Editor.



Complexity requirements are enforced when passwords are changed or created. If **Password must meet complexity requirements** is checked, passwords must meet the following minimum requirements:

- Not contain the user's account name or parts of the user's full name that exceed two consecutive characters.
- Be at least six characters in length.
- Contain characters from three of the following four categories:
  - Latin uppercase characters (A through Z).
  - Latin lowercase characters (a through z).
  - Base 10 digits (0 through 9).
  - Non-alphabetic characters (for example, !, \$, #, %).

### 3.13.2 Changing the administrative password



*Never allow persons who are not system administrators to learn the administrator password.*

#### On a Windows 7 system

To change the administrative password on a Windows 7 system:

1. Log in to the ScanStation computer as the Windows administrator.
2. From the Windows **Start** menu, select **Control Panel**.
3. Select **User Accounts**.
4. Select **Change your Password**.
5. Enter the current password.
6. Enter the **New Password**.
7. Confirm the **New Password**.
8. Enter the **Password Hint**.
9. Click **Change Password**.
10. Log out of Windows.

### On a Windows 8.1 Pro system

To change the administrative password on a Windows 8.1 Pro system:

1. Log in to the ScanStation computer as the Windows administrator.
2. From the **Start** page, slide the mouse to the top right corner to bring up the side bar.
3. Select **Settings**.
4. From the **Settings** sidebar, select **Change PC settings**.  
The **PC Settings** page appears.
5. Select **Accounts**.  
The **Accounts** page appears.
6. Select **Sign-in Options**.  
The **Sign-in Options** page appears.
7. Select **Password**.
8. Click **Change**.
9. On the next page, confirm current password and click **Next**.
10. On the next page, enter and reenter the new password, enter the password hint and click **Next**.
11. On the next page, click **Finish**.
12. Log out of Windows.

### 3.13.3 Creating the non-administrative user

The non-administrative user account is for ScanStation operators. It is a *standard* Windows account with the addition of a password. This user:

- Can run the Tabulator and DeleteBox programs.
- Requires the presence of the administrator to run the scanner update script (to enter the administrative password).

### On a Windows 7 system

To create the non-administrative user account on a Windows 7 system:

1. Log in to the ScanStation computer as the Windows administrator.
2. From the Windows **Start** menu, select **Control Panel**.
3. Select **User Accounts**.

4. On the next page select **Manage Another Account**.
5. On the next page select **Create a New Account**.
6. On the next page, enter the account name, select **Standard User**.
7. Click **Create Account**.
8. From the **Manage Accounts** page, select the new account.
9. Click **Change the Password**.
10. Enter and reenter the password.
11. Enter a password hint.
12. Click **Change Password**.

### On a Windows 8.1 Pro system

To create the non-administrative user account on a Windows 8.1 Pro system:

1. Log in to the ScanStation computer as the Windows administrator.
2. From the **Start** page, search for **Create an account**.  
The **Manage Accounts** page appears.
3. Select **Add a new user in PC settings**.  
The **PC Settings** page appears.
4. Select **Add an account**.  
The **How Will that Person sign in** page appears.
5. Select **Sign in without a Microsoft Account (not recommended)**.  
The first **Add a User** page appears.
6. Select **Local Account** (on the bottom).
7. Enter the user name (for example, **Scan Op.**)
8. Enter and reenter the password.
9. Enter a password hint and click **Next**.  
The next **Add a User** page appears.
10. Click **Finish**.

11. To verify creation of the standard user:
  - a. From the **Accounts** page, select the new user.
  - b. Click **Edit**.
  - c. Verify the Account Type is set to **Standard User**.

### 3.13.4 Setting up the non-administrative user

To set up access to applications for the non-administrative user:

1. Map the ScanStation computer to the ScanServer. See Mapping the ScanStation to the ScanServer on page 62.
2. Create a desktop shortcut to the P: drive. See Creating a desktop shortcut to the P: drive on page 65.
3. Create a desktop shortcut to ScandAll PRO:
  - a. Do as follows:
    - On a Windows 7 system**  
Open **Windows Explorer**.
    - On a Windows 8.1 Pro system**  
Open **File Explorer (This PC)**.
  - b. Select **C:\Program Files (x86)\fiScanner\ScandAll Pro**.
  - c. Right-click **ScandAllPro.exe**.
  - d. From the context menu, select **Send to**.
  - e. From the **Send to** submenu, select **Desktop (create shortcut)**.
4. Configure the scanner as a device. See Configuring the scanner as a device on page 65.
5. Run the model-specific scanner update script. See Running the scanner update script on page 68.
6. Configure the scanner profile and event in ScandAll PRO. See Configuring ScandAll PRO on page 70.

### 3.14 Viewing the Windows Event Log

The Windows operating system tracks application, hardware, security, system, and other events in the Windows Event Log. You can use the Windows Event Viewer to monitor the logging of all activities taking place on the Windows computers used in the ClearCount system.

The Windows Event Log must *not* be disabled. ClearCount performs a check to ensure the Windows Event Log has not been disabled every time Tabulator is run. If the Windows Event Log is not enabled, a fatal error message is issued at Tabulator startup.

Once you access it, Windows Event Viewer operates identically on Windows 7 and Windows 8.1 Pro.

#### On a Windows 7 system

To access the Event Viewer on a Windows 7 system:

1. Log in to the ScanStation computer as the Windows administrator.
2. From the Control Panel, select **System and Security > Administrative Tools**.
3. Double-click **Event Viewer**.

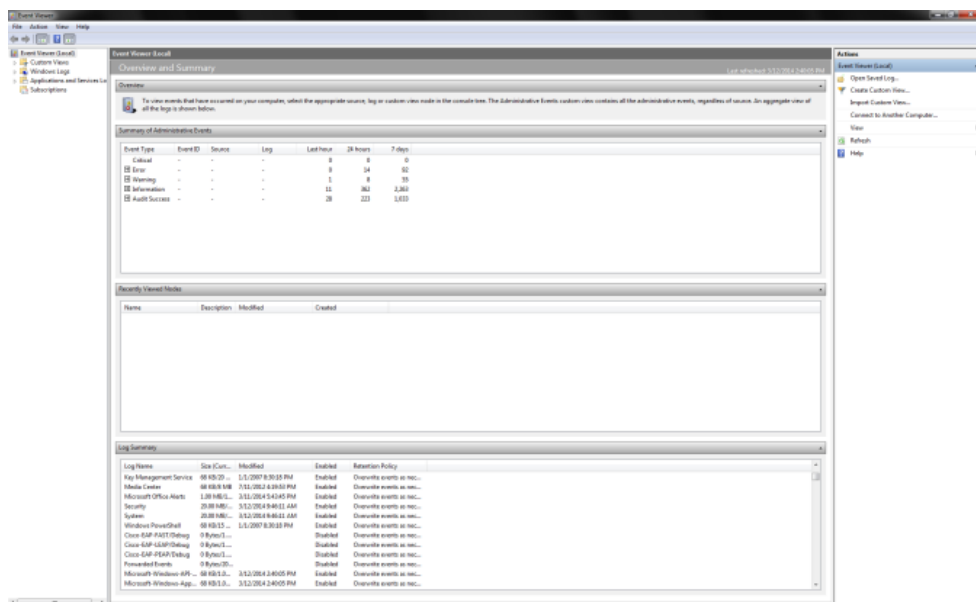


Figure 3-54. Windows Event Viewer

### On a Windows 8.1 Pro system

To access the Event Viewer on a Windows 8.1 Pro system, from the **Start** page, enter event and select **View Event Logs** from the search results.

### For more information on Windows Event Viewer

For details on using the Windows Event Viewer, consult the Event Viewer online help, or follow these links for more information from Microsoft:

<http://windows.microsoft.com/en-us/windows/what-information-event-logs-event-viewer#1TC=windows-7>

<http://technet.microsoft.com/en-us/library/cc766042.aspx>

<http://technet.microsoft.com/library/jj134043>

## 3.14.1 Viewing network connection and disconnection events

Windows logs network connections and disconnections by default, allowing you to audit network activity.

### On a Windows 7 system

To audit network events on a Windows 7 system:

1. Log in to the ScanStation computer as the Windows administrator.
2. Click the **Start > Control Panel**.
3. Set **View by:** to **Large icons**.
4. Click **Administrative Tools**.
5. Double-click **Event Viewer**.
6. In the lefthand pane, expand **Applications and Services Logs**.
7. Select **Microsoft > Windows > NetworkProfile**.
8. Select **Operational**.

All network connections and disconnections are displayed. (Double-click any event to view its details.) Default display order is: Level, Date and Time, Source, Event ID, and Task Category. The important items are Date and Time, and, Event ID. Relevant values for Event ID include:

- 10000—Indicates a connection to the network.
- 10001—Indicates a disconnection from the network.

### On a Windows 8.1 Pro system

To audit network events on a Windows 8.1 Pro system:

1. Log in to the ScanStation computer as the Windows administrator.
2. From the **Start** page, search for and open the **Control Panel**.
3. Set **View by:** to **Large icons**.
4. Click **Administrative Tools**.
5. Double-click **Event Viewer**.
6. In the lefthand pane, expand **Applications and Services Logs**.
7. Select **Microsoft > Windows > NetworkProfile > Operational**.

All network connections and disconnections are displayed. (Double-click any event to view its details.) Default display order is: Level, Date and Time, Source, Event ID, and Task Category. The important items are Date and Time, and, Event ID. Relevant values for Event ID include:

- 10000—Indicates a connection to the network.
- 10001—Indicates a disconnection from the network.

### 3.15 Updating Windows Defender on ScanStations

Update Windows Defender virus definitions when configuring ScanStations and then at least once a week. Please see Updating Windows Defender definitions on page 102 for instructions.



## 3.16 Restricting program access and adding application whitelists

Windows allows you to protect against unauthorized programs through the following two steps:

- You implement a **Software Restriction Policy** (SRP), to prohibit unauthorized programs by default.
- You establish a *whitelist*, which explicitly lists what programs and services are permitted. The whitelist is created through a set of rules governing which procedures are allowed.



Make sure you install the Fujitsu software on all ScanStations, as documented in Chapter 3, **Configuring ScanStations**, before setting up your whitelists.

You restrict program access and add whitelists in the Group Policy Editor. The process is the same on Windows 7 and Windows 8.1 Pro, but you access the Group Policy Editor differently.

### 3.16.1 Implementing a Software Restriction Policy (SRP)

To implement an SRP:

1. Access the Group Policy Editor:

#### On a Windows 7 system

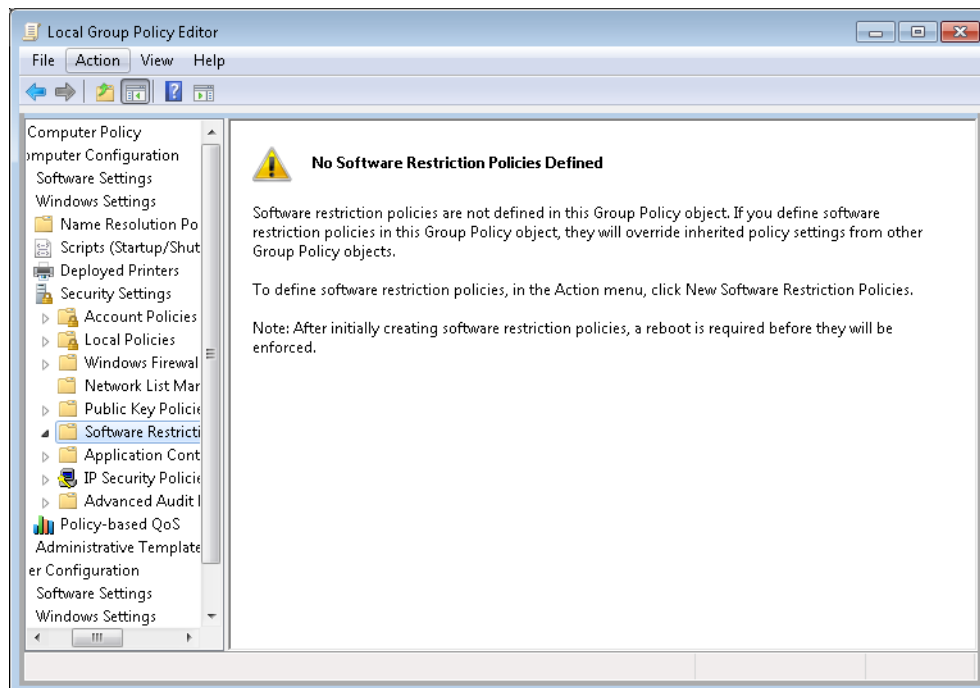
- a. Click the **Start** button.
- b. In **Search programs and files**, enter gpedit.msc.
- c. In the search results, click **gpedit**.

#### On a Windows 8.1 Pro system

From the **Start** page, enter gpedit.msc and then click **gpedit** in the search results.

2. From the left pane, select **Computer Configuration > Windows Settings > Security Settings > Software Restriction Policies**.

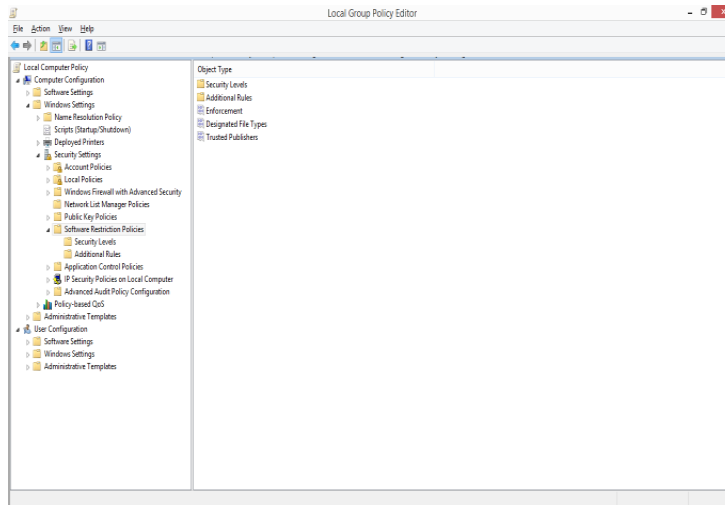
The **Software Restrictions Policies** page appears.



**Figure 3-55. Software Restrictions Policies page**

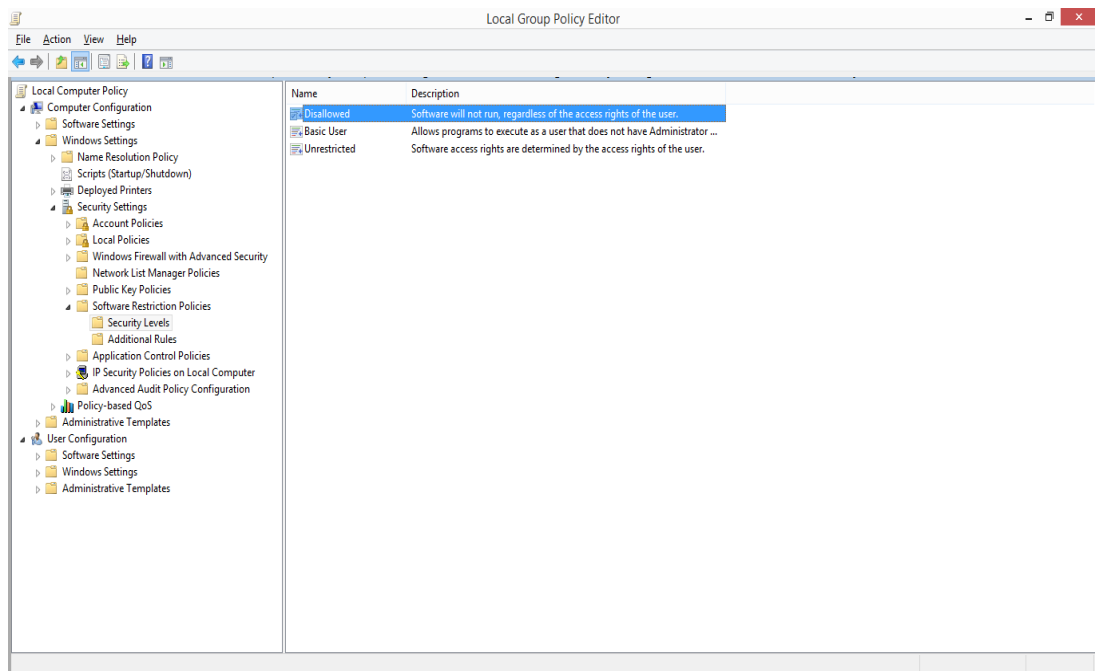
3. From the menu bar, click **Action > New Software Restriction Policies**. This allows you to create a default set of software restriction policies.

4. From the right pane, double-click the **Security Levels** folder. The **Security Levels** folder opens.



**Figure 3-56. Security Levels folder**

5. From the right pane, double-click **Disallowed**.

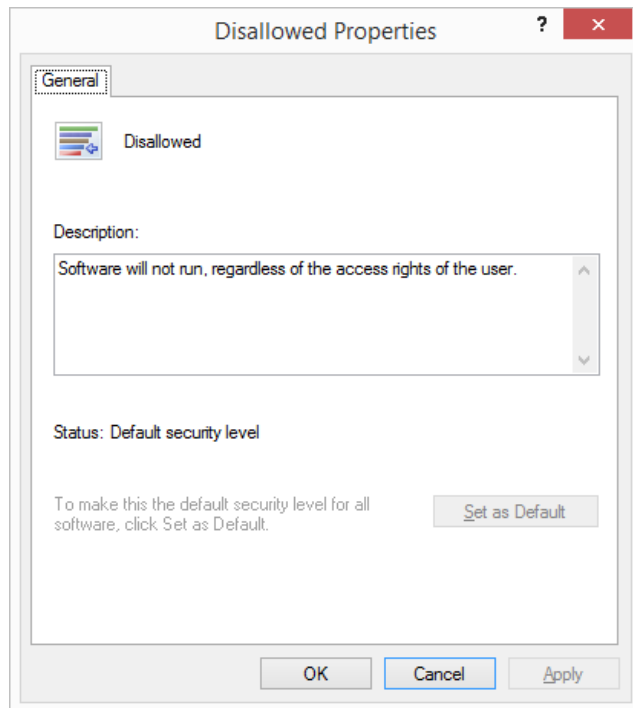


**Figure 3-57. Access to Disallowed dialog from Group Policy Editor**

The **Disallowed Properties** dialog appears.

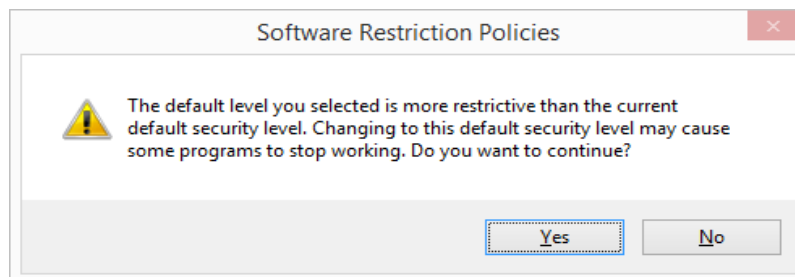
6. Click **Set as Default** and then click **OK**.

This ensures that, by default, the system does not allow any programs without specific authorization to run.



**Figure 3-58. Disallowed Properties dialog**

7. In the **Software Restriction Policies** message box, click **Yes**.



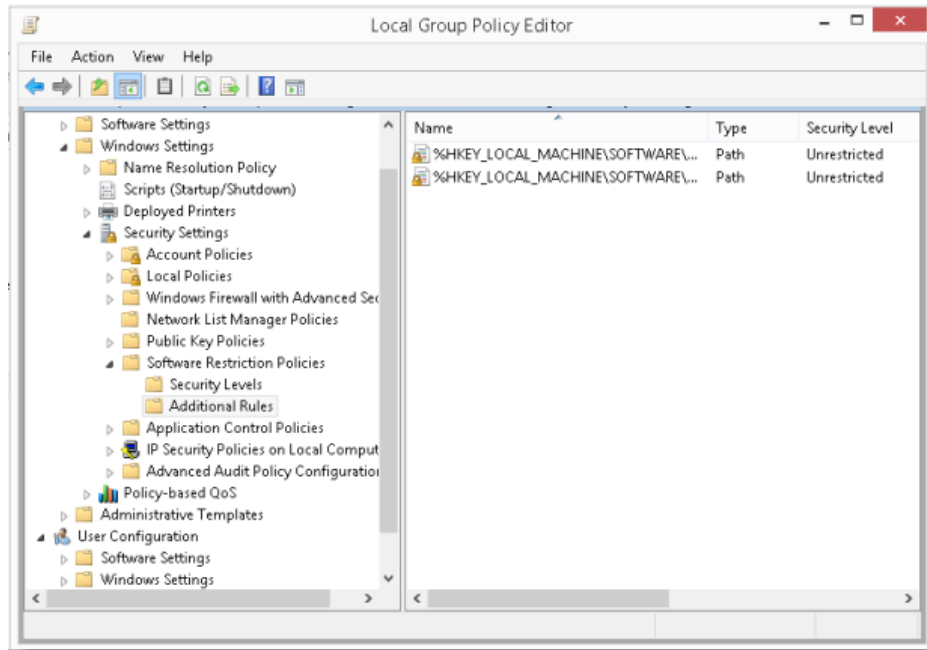
**Figure 3-59. Software Restriction Policies commitment message**

8. Click **OK** to dismiss the **Disallowed Properties** dialog.

### 3.16.2 Creating a whitelist

To create a whitelist:

1. Access the Group Policy Editor.
2. From the left pane, select **Computer Configuration > Windows Settings > Security Settings > Software Restriction Policies**.
3. From the right pane, double-click the **Additional Rules** folder to open it. This is where you create the whitelist.



**Figure 3-60. Default rules in Group Policy Editor**

Note that the following default rules to ensure the computer functions normally:

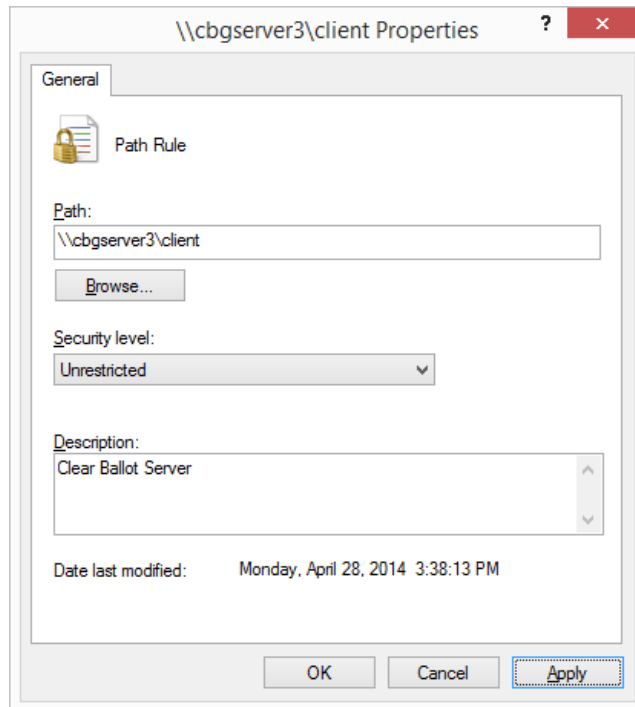
- %HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\SystemRoot%—Allows normal Windows functions to occur. It allows the system to boot normally, and provides access to necessary programs such as Notepad and the Windows Event Viewer. This rule must *not* be removed.
- %HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\ProgramFilesDir%—Enables the running of all executables in the **Program files** folder. If unnecessary programs were removed in the procedure described in Hardening, validating, and securing the system on page 101, then this rule can remain. Otherwise, this rule should be removed and the jurisdiction *must* create new path rules for the specific programs that it needs to run.

4. Create a path rule to allow access to files necessary for running scanners and programs required for the system to function properly:
  - a. Right-click **Additional Rules** and select **New Path Rule**.
  - b. In **Path**, enter %HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\ProgramFilesDir (x86)%.
  - c. Ensure the security level is set to **Unrestricted**.
  - d. (Optional) Enter a description for the rule.
  - e. Click **OK**.



This rule allows access to 32-bit applications that are already installed, and, to the 64-bit applications already permitted by default.

5. Create a path to the ClearCount server:
  - a. Right-click **Additional Rules** and select **New Path Rule**.
  - b. Enter the path to the ScanServer. The path is `\\Server_Name\client`, where *Server\_Name* is the name that was created for the ScanServer during installation.
  - c. Ensure the security level is set to **Unrestricted**.
  - d. (Optional) Enter a description for the rule.
  - e. Click **OK**.

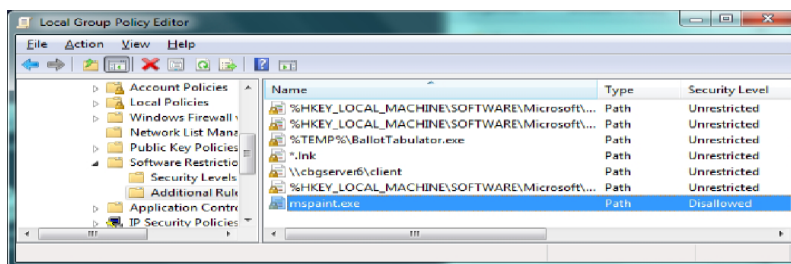


**Figure 3-61. ScanServer client properties**

6. Create a path to enable all shortcuts (otherwise, to run a program the user must navigate to the specific file location):
  - a. Right-click **Additional Rules** and select **New Path Rule**.
  - b. In **Path**, enter `*.lnk`.
  - c. Ensure the security level is set to **Unrestricted**.
  - d. (Optional) Enter a description for the rule.
  - e. Click **OK**.

7. Allow the Tabulator to run on the ScanStation:
  - a. Right-click **Additional Rules** and select **New Path Rule**.
  - b. In **Path**, enter %TEMP%\BallotTabulator.exe.
  - c. Ensure the security level is set to **Unrestricted**.
  - d. (Optional) Enter a description for the rule.
  - e. Click **OK**.
8. Disallow Microsoft Paint from running on the ScanStation:
  - a. Right-click **Additional Rules** and select **New Path Rule**.
  - b. In **Path**, enter mspaint.exe.
  - c. Ensure the security level is set to **Disallowed**.
  - d. (Optional) Enter a description for the rule.
  - e. Click **OK**.
9. Close the Group Policy Editor.

After implementing the additional paths, the whitelist resembles the following:



**Figure 3-62. Example of modified whitelist**

Additional entries can be created so the policy can adhere to local jurisdictional regulations.

For additional information on SRP, both Microsoft's TechNet and the National Security Agency provide detailed descriptions of procedures and options for creating a whitelist using SRP:

<http://technet.microsoft.com/en-us/library/cc786941%28v=ws.10%29.aspx>

[http://www.nsa.gov/ia/\\_files/os/win2k/Application\\_Whitelisting\\_Using\\_SRP.pdf](http://www.nsa.gov/ia/_files/os/win2k/Application_Whitelisting_Using_SRP.pdf)

### 3.17 Denying access to USB drives

To deny access to USB drives:



1. Log in to Windows as an administrative user.
2. Open the Microsoft Management Console (MMC):  
**On a Windows 7 system**  
From the **Start** menu, run **mmc.exe** and click **Yes** in response to the prompt.  
**On a Windows 8.1 Pro system**  
From the **Start** page, search for and run **mmc.exe**, and click **Yes** in response to the prompt.
3. Click **File > Add/Remove Snap-in**.  
The **Add or Remove Snap-ins** window appears.
4. Select **Group Policy Object Editor** and click **Add**.  
The **Select Group Policy Object** window appears.
5. Click **Browse**.  
The **Browse for a Group Policy Object** window appears,
6. Select the **Users** tab.
7. Select **Non-Administrators** and click **OK**.  
The **Select Group Policy Object** window contains a box named **Group Policy Object:** that says **Local Computer\Non-Administrators**.
8. Click **Finish**.
9. Click **OK**.  
*Console 1* appears. The lefthand pane contains the applicable subset of nodes from the **Group Policy** editor.
10. From the left pane, select **Local Computer\Non-Administrators > User Configuration > Administrative Templates > System > Removable Storage Access**.
11. Double-click **All Removable Storage classes: Deny all access**.  
The **All Removable Storage classes: Deny all access** dialog appears.
12. Select **Enabled**.
13. Click **OK**.

14. Save the console:
  - a. Select **File > Save**.
  - b. Ensure the default name is Console1.
  - c. Click **Save**.
15. Select **File > Exit**.

The MMC closes.

### 3.18 Powering down and restarting ScanStation computers



Before continuing on to validation, you *must* complete the hardening process by powering down and restarting every ScanStation computer.

### 3.19 Validating software setup

The jurisdiction must validate that the system setup occurred properly, that no files were corrupted, and that no unapproved files are present on the system following an installation. If any issue is identified during the software setup validation process then the entire system must be reinstalled, to ensure the jurisdiction is working with a certified system.

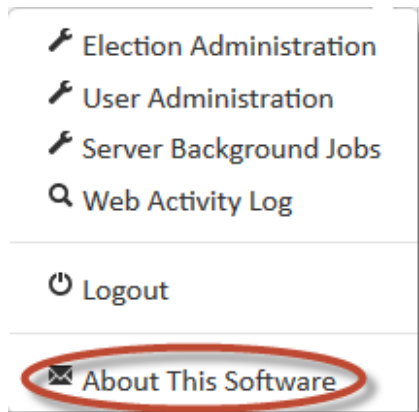
#### 3.19.1 Obtaining the list of all software files present on the system

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:

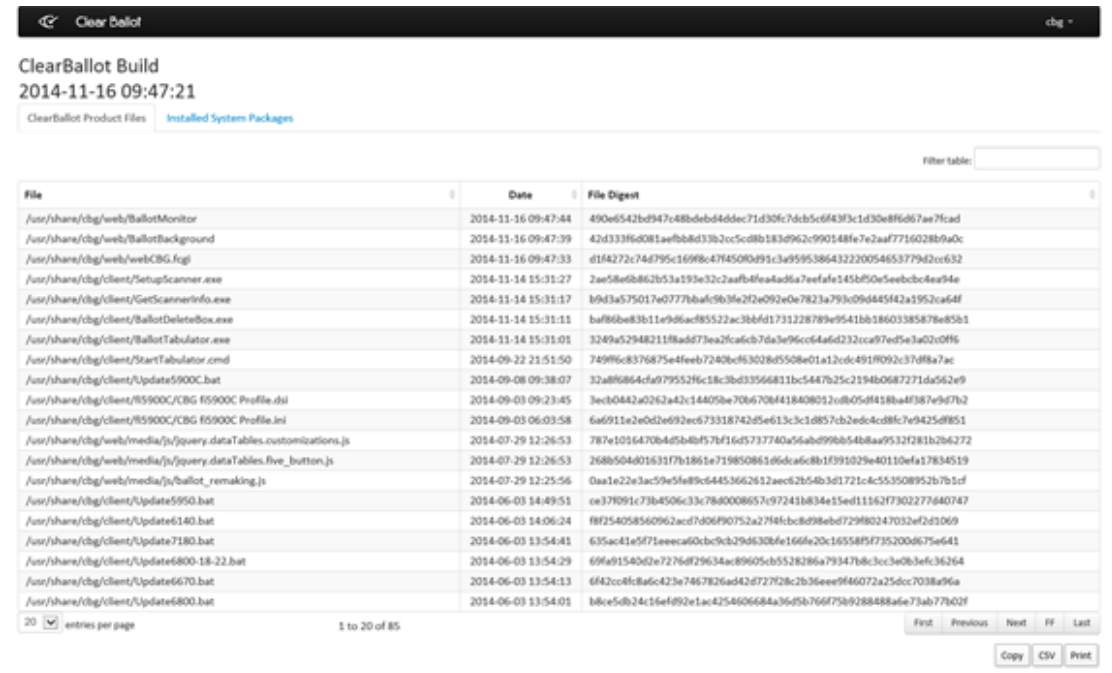
1. Log in to an Election Administration Station computer as a Windows administrator.
2. [Log in to ClearCount as administrator.](#)

3. From the **Election Index** page, click the down arrow next to the user name (the login dropdown list) and then click **About this software**.



**Figure 3-63. About This Software menu item**

- In the **About this software** page, click the **ClearBallot Product Files** tab to view the ClearCount software, or the **Installed System Packages** tab to view third-party packages included with the ClearCount software.



Clear Ballot

ClearBallot Build  
2014-11-16 09:47:21

ClearBallot Product Files [Installed System Packages](#)

Filter table:

File	Date	File Digest
/usr/share/cbg/web/BallotMonitor	2014-11-16 09:47:44	490e6542b0947c48bdeb4d4dec71d30fc7dcb5c643f3c1d30e8f6d67ae7fcd
/usr/share/cbg/web/BallotBackground	2014-11-16 09:47:39	42d333f6d081aefbb8d33b2cc5c0bb183d962c990148fe7e2aa7716028b9a0c
/usr/share/cbg/web/webCBG.fcgi	2014-11-16 09:47:33	d1f4272c74d795c1698c47f450f0d91c3a95953864322005465377942cc632
/usr/share/cbg/client/SetupScanner.exe	2014-11-14 15:31:27	2ae58e6b862b53a193e32c2aafbf4eakad8a7eeafe145b050e5eebcb4ea94e
/usr/share/cbg/client/GetScannerInfo.exe	2014-11-14 15:31:17	b9d3a575017e0777bbaf9b3fe2f2e092e0e7823a793c09d445f42a1952caf4f
/usr/share/cbg/client/BallotDeleteBox.exe	2014-11-14 15:31:11	ba86be83b11e9d6ac85522ac3bbfd1731228789e9541bb18603385878e5b1
/usr/share/cbg/client/BallotTabulator.exe	2014-11-14 15:31:01	3249a52948211f8add73ea2fcafcb7da3e96cc4a6d232caa97ed5e3a02c096
/usr/share/cbg/client/StartTabulator.cmd	2014-09-22 21:51:50	74996c8376875e4feeb7240bc63028d5508e01a12cdc491f092c37d88a7ac
/usr/share/cbg/client/Update5900C.bat	2014-09-08 09:38:07	32a86864cfa979552f6c18c3bd33566811bc5447b25c2194b0687271da562e9
/usr/share/cbg/client/IS900C/CBG IS900C Profile.dsi	2014-09-03 09:23:45	3ecb0442a262a42c14405be70b670f418408012c0b05d1418ba4f3879d7b2
/usr/share/cbg/client/IS900C/CBG IS900C Profile.ini	2014-09-03 06:03:58	6a6911e2e0d2e092ec673318742d5e613c3c1d857cb2edc4c8fc7e9425d851
/usr/share/cbg/web/media/js/jquery.dataTables.customizations.js	2014-07-29 12:26:53	787e1056470b4d5b4b57bf16d5737740a56ab099bb54b8aa9532f281b2b6272
/usr/share/cbg/web/media/js/jquery.dataTables.five_button.js	2014-07-29 12:26:53	268b504d01631f7b1861e719850861d6dcac68b1f391029e40110efa17834519
/usr/share/cbg/web/media/js/ballot_remaking.js	2014-07-29 12:25:56	0aa1e22e3ac59e5f89c64453662612aec62b54b3d1721c4c553508952b7b5cf
/usr/share/cbg/client/Update5950C.bat	2014-06-03 14:49:51	ce37f091c73b4506c33c7840008657c97241b834e15ed1116277302277640747
/usr/share/cbg/client/Update6140C.bat	2014-06-03 14:06:24	88f254058560962acd7d06f90752a2f8fcbcd898ebd72980247032ef2d1069
/usr/share/cbg/client/Update7180C.bat	2014-06-03 13:54:41	635ac41e5f71eeecac0cb9cb29d6308fe166fe20c16558f5735200d675e641
/usr/share/cbg/client/Update6800-18-22C.bat	2014-06-03 13:54:29	69fa91540d2e7276f29634ac89605cb5528286a79347b8c3cc3e0b3efc36264
/usr/share/cbg/client/Update6670C.bat	2014-06-03 13:54:13	6f42cc48c8a6c423e7467826ad42d72728c2b36eeef46072a25d0c7038a96a
/usr/share/cbg/client/Update6800C.bat	2014-06-03 13:54:01	b8ce5db24c16ef692e1ac4254606684a36d5b766f75b9288488afe73ab77b02f

20 entries per page 1 to 20 of 85

First Previous Next FF Last

Copy CSV Print

**Figure 3-64. Clear Ballot Product Files tab**

Compare the official printed version of the ClearCount Approved Software List to the **About this software** page for its installed version of ClearCount. If the two lists do not match, then the system must be reinstalled. In addition, if any of the file digests do not match, the system must be reinstalled. If mismatches between the list from your state and your list persist, notify your state election authority and Clear Ballot before continuing to use the system.

### 3.19.2 Initial register and variable validation

ClearCount's initial register and variable values are located in the **CurrentElection.bat** file. This file is located on the P: drive, which you mapped to the ScanStations and Election Administration Stations as part of set up.

This file contains the values that are used to set the ELECTION and CBGSERVER values in the system. Initially, both of these values should be empty. After the first election has been created on a system (or once an election has been set to Active following a restore), the variable ELECTION takes the value of the name of the active election and the variable CBGSERVER takes the value of the name of the ScanServer computer.

To verify that the values in CurrentElection.bat are empty:

1. Navigate to the P: drive.
2. Right-click CurrentElection.bat and click **Edit**.

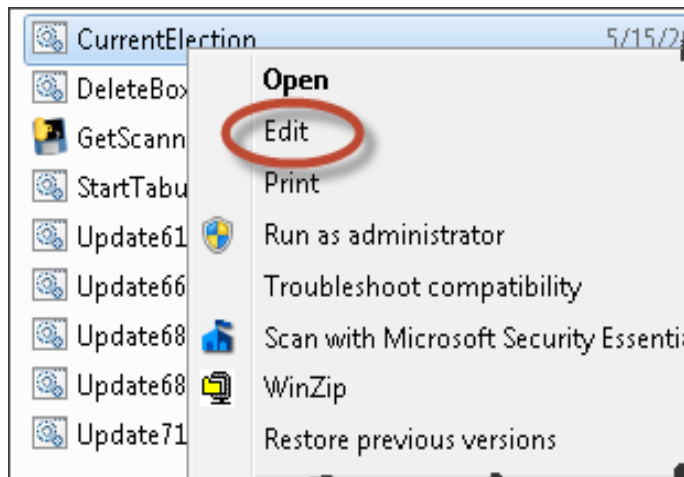


Figure 3-65. CurrentElection.bat, Edit menu item

3. Verify that the values in the file are empty, and then close the file.

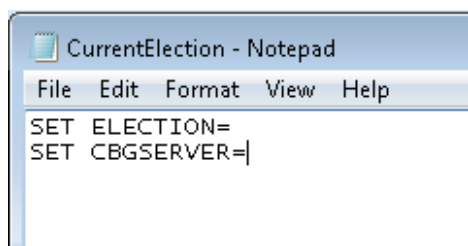


Figure 3-66. Contents of CurrentElection.bat

### **3.20 Testing the ScanStation configuration**

Please see ClearCount readiness testing on page 138 and ClearCount Logic and Accuracy testing on page 140.

### **3.21 Preparing for daily scanning**

Before the start of scanning each day, or if you change the physical configuration, walk through the scanning procedures described in *ClearCount Election Administrator's Guide*.

## Chapter 4. Configuring Election Administration Stations

Election Administration Stations connect to the ScanServer on a browser through a closed, wired Ethernet network. Election Administration Stations require a small amount of configuration, as follows:

- Mapping the Election Administration Station to the ScanServer
- Installing a supported browser
- Ensuring no extraneous software is installed on the computer



After completing the steps in this chapter and before first use, you must review and implement the hardening steps for all Election Administration Stations specified in Hardening, validating, and securing the system on page 101.

### 4.1 Mapping the Election Administration Station to the ScanServer

All of the ClearCount software resides on the ScanServer. It is necessary to connect each Election Administration Station to the ScanServer through the router in case files need to be shared. (For example, if there is a problem at a ScanStation in the middle of scanning a box, you can use an Election Administration Station to remotely delete the data it sent to the ScanServer.)

#### On a Windows 7 system

To map an Election Administration Station to the ScanServer on a Windows 7 system:

1. In **Windows Explorer**, select the **C:** drive and click **Map network drive**.

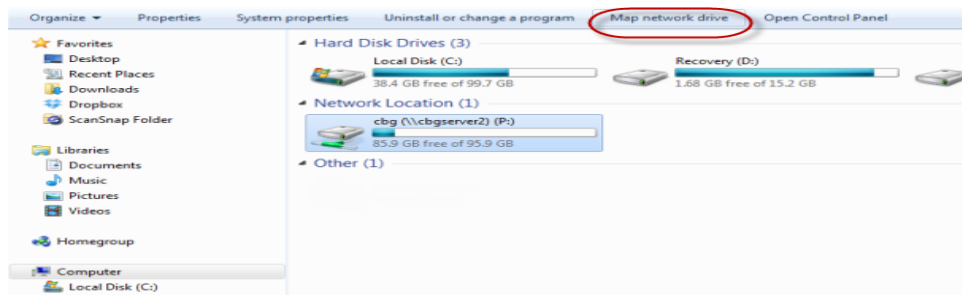
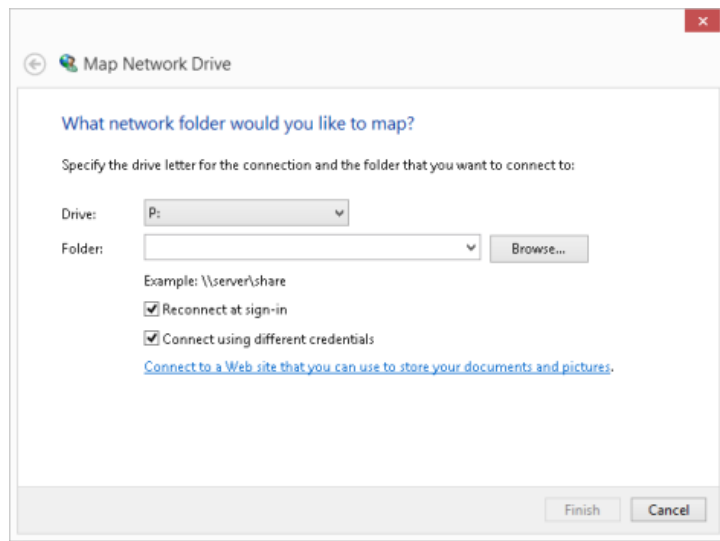


Figure 4-1. Map network drive selection

2. In the **Map Network Drive** dialog, select the P: drive.



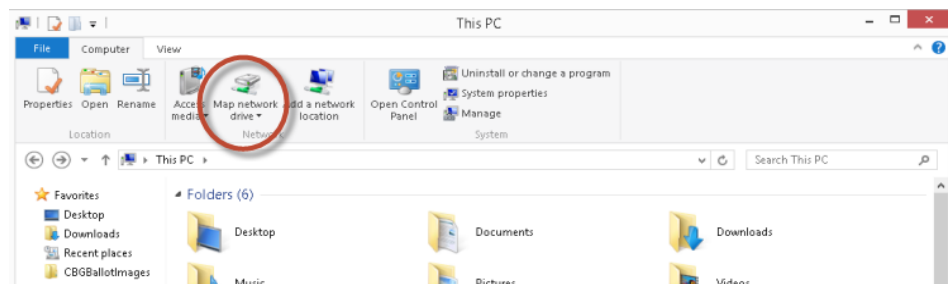
**Figure 4-2. Map Network Drive dialog**

3. In the Folder section, click **Browse** and then browse to the ScanServer (**\\ScanServer\_Name\client**).
4. Make sure that both **Reconnect at logon** and **Connect using different credentials** are checked.
5. Click **Finish**.

### On a Windows 8.1 Pro system

To map an Election Administration Station to the ScanServer on a Windows 8.1 Pro system:

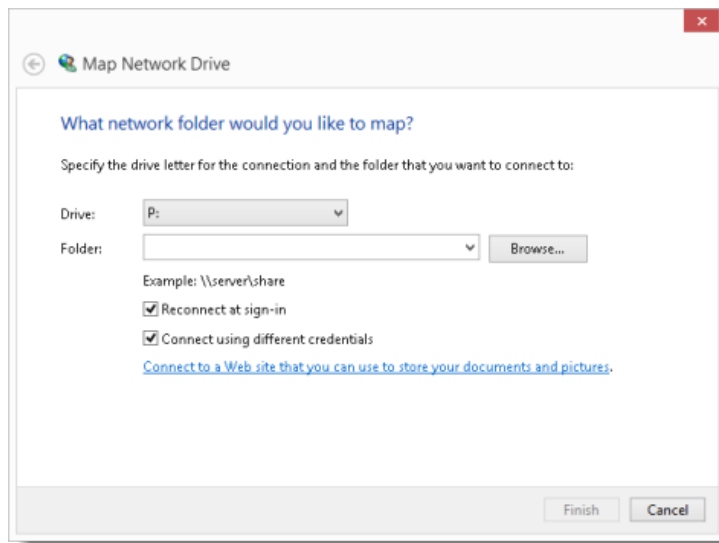
1. In the **File Explorer**, navigate to the top level (**This PC**).
2. From the **Computer** tab, click **Map network drive** to open the menu, and then click **Map network drive**.



**Figure 4-3. Map network drive selection**



3. In the **Map Network Drive** dialog, select the P: drive.



**Figure 4-4. Map Network Drive dialog**

4. In the Folder section, click **Browse** and then browse to the ScanServer (**\\ScanServer\_Name\client**).
5. Make sure that both **Reconnect at logon** and **Connect using different credentials** are checked.
6. Click **Finish**.

## 4.2 Creating a desktop shortcut to the P: drive

For the sake of convenience, you can create a desktop shortcut to the P: drive, which holds these commonly-used ClearCount programs:

- StartTabulator.cmd
- BallotDeleteBox.exe
- Update scripts for different scanner models and ballot sizes.



This drive also holds some system files that must *not* be opened except under the direction of Clear Ballot service personnel.

### On a Windows 7 system

To create a shortcut to the P: drive on a Windows 7 system:

1. In Windows Explorer, right-click the P: drive.
2. Right-click the file, and click **Create shortcut**.

3. In **Shortcut information**, click **Yes**.

A shortcut to the file appears on the desktop.

### On a Windows 8.1 Pro system

To create a shortcut to the P: drive on a Windows 8.1 Pro system:

1. In the **File Explorer**, navigate to the top level (**This PC**).
2. Right-click the P: drive and click **Create shortcut**.

## 4.3 Installing a browser

In order to access ClearCount Election Reports and administrative applications, you must have a supported browser installed on the Election Administration Station. It is possible that the computer you are using as an Election Administration Station came installed with a supported version of Microsoft Internet Explorer. If not, or if you prefer to use a different browser, you need to install one. (You may also install more than one of the supported browsers if you choose.) For the list of supported browser versions, contact Clear Ballot.



Because the computers used in an election must never be connected to the Internet, you must download the browser software to a computer that is connected to the Internet and copy the software to the Election Administration Station.

To install a browser on an Election Administration Station:

1. On a separate computer with a USB port and an Internet connection, navigate to the site from which the browser you want to install is distributed.
  - Microsoft Internet Explorer: <http://windows.microsoft.com/en-us/internet-explorer/download-ie>
  - Mozilla Firefox: <http://www.mozilla.org/en-US/firefox/new/>
  - Google Chrome: <https://www.google.com/intl/en/chrome/browser/>
2. Follow the instructions on the site of your choice to download the browser.
  - If different operating system versions are available, ensure you download the correct one for the targeted Election Administration Station.
  - Note the name of the file and the path of the download location.
3. Insert a flash drive into the USB port of the computer you downloaded the browser file to.
4. Copy the browser file to the flash drive.
5. Eject the flash drive from the download computer.

6. Insert the flash drive into the Election Administration Station computer.
7. Copy the browser file to the Election Administration Station.
8. Eject the flash drive from the Election Administration Station.
9. Double-click the browser file to launch the installer, and follow the instructions onscreen to complete the installation.
10. If there is more than one Election Administration Station, repeat steps 6 through 9 on each computer.

#### 4.4 Installing Adobe Flash Player



Adobe Flash Player is preinstalled with Internet Explorer on Windows 8 computers.

To install Adobe Flash Player:

1. On a computer outside the closed ClearCount network, and which has a USB port and Internet connection, navigate to <http://get.adobe.com/flashplayer/otherversions/>.

The **Adobe Flash Player Step: 1 of 3** page appears.

2. In **Step 1, Select an operating system**, select the operating system running on the target Election Administration Stations.
3. In **Step 2, Select a version**, select the browser software in use on the target Election Administration Stations.
4. Deselect the optional offer for McAfee Security Scan Plus.
5. Click **Download Now**.

The **Adobe Flash Player Step: 2 of 3** page appears; wait for initialization to progress to completion, when the **opening\_  
installflashplayerVersionInformation** dialog appears.

6. Click **Save File**.

The selected installer executable is saved to the current user's **Downloads** folder as `install_flashplayerVersionInformation.exe`.

7. Copy the installer executable to the flash drive, and eject the flash drive from the USB drive.
8. Insert the flash drive in the USB drive of an Election Administration Station.
9. Copy the installer executable to that computer, and eject the flash drive.

10. Double-click the installer executable to launch the installation.  
The **User Account Control** dialog appears.
11. Enter the Windows administrative password.
12. Follow the on-screen instructions:
  - a. Close the browser window (and any other applications named by the installer) and click **Retry**.
  - b. Click **Finish**.
13. Repeat steps 8 through 12 on the other Election Administration Stations.

### 4.5 Avoiding extraneous software

The Election Administration Station is used only to communicate with the ScanServer for system administration and reporting purposes. For security purposes, it *must* not contain extraneous software.

In order to paste information copied from the Election Reports, you may use the Notepad program, which is included on Windows computers by default. You may then save the information as a text file and copy it onto a flash drive, from which it can be moved to other computers and copied to programs such as Microsoft Excel.

Certain other programs and utilities may also be installed on the Election Administration Station computer by default when you receive it from the manufacturer. A Windows whitelist controls which software can run on the Election Administration Station. For details, see Hardening, validating, and securing the system on page 101.

## Chapter 5. Hardening, validating, and securing the system

After the computers used in the ClearCount system are installed and configured appropriately, you need to take the following steps to harden the system. Hardening the ClearCount system makes it more secure from threats.



Hardening the system includes procedural and environmental elements that may be governed by local statute. Follow the steps in every section below to harden your system; no steps are "recommended" or "optional". Make sure to consult local regulations as part of the hardening process. Local voting system security regulations may dictate that you do more than what is described in this chapter.

### 5.1 Hardening the ScanServer

The ScanServer is a Linux server that is configured as an appliance. Once the ClearCount software has been installed there is no need for any direct access to the ScanServer other than during a support call with Clear Ballot. All normal pre-election, election, and post-election access to the ScanServer is by remote connection from the ScanStations or Election Administration Stations, all of which are running on authenticated Windows workstations.

The Linux operating system requires at least one administrator account. Clear Ballot conforms to this requirement by allowing customers to create an administrator account with a password of their own choosing. Clear Ballot requires that the password that is created at install time be secured. The administrator account is *never* used, except as needed by Clear Ballot to diagnose a problem or reinstall the software. (Reinstallation completely replaces the software; all accounts initialized by the installation procedure are recreated.) To verify compliance with this no-use policy, logins and logouts to the Linux server, if any, are recorded in the Web Activity Log.



If any unexpected logins to the ScanServer appear in the Web Activity Log, the system might be compromised. Alert the appropriate authorities for your jurisdiction, investigate the nature of these unexpected logins, and reinstall the ClearCount software.

To completely harden the ScanServer, you must also set the BIOS password.

## 5.2 Hardening the Windows computers



The information in this section applies to Election Administration Station and ScanStation computers.

Hardening the Windows computers in the ClearCount system consists of minimizing routes of access to them, implementing malware protections, and utilizing built-in logging features.



Because the computers used in an election must never be connected to the Internet, you must download any necessary software to a computer with Internet access and copy it to the Election Administration Station or ScanStation.

### 5.2.1 Updating Windows Defender definitions

Windows provides the Windows Defender antivirus program in both Windows 7 and Windows 8.1 Pro. In order to keep its virus definitions up to date, you must update them. Microsoft recommends that Windows Defender be updated at least once a week.



Maintain the history and archive copies of each update.

Because computers used in elections must never be connected to the Internet, the virus definition update must be done off line using removable memory media, as follows.

#### On a Windows 7 system

To update Windows Defender offline on Windows 7 system:

1. On a computer outside the closed ClearCount network, and which has a USB port and Internet connection, navigate to <http://support.microsoft.com/kb/923159/en-US>.
2. Download the antivirus software according to the instructions on that site. The software is delivered as a single executable named `mpas-feX64.exe`.
3. Insert a flash drive into the USB port of the computer you downloaded the antivirus software to.
4. Copy the antivirus file `mpas-feX64.exe` to the flash drive.
5. Eject the flash drive from the download computer.

6. Insert the flash drive into one of the Election Administration Station or ScanStation computers.
7. Copy mpas-feX64.exe to that computer.
8. Eject the flash drive from that computer.
9. Double-click mpas-feX64.exe to launch the installer and follow the instructions onscreen to complete the installation.
10. Repeat steps 7 through 9 on each Election Administration Station and ScanStation computer.

### **On a Windows 8.1 Pro system**

To update Microsoft Security Essentials off line on a Windows 8.1 Pro system:

1. On a computer outside the closed ClearCount network, and which has a USB port and Internet connection, navigate to <http://support.microsoft.com/kb/923159/en-US>.
2. Download the antivirus software according to the instructions on that site. The software is delivered as a single executable named mpam-feX64.exe.
3. Insert a flash drive into the USB port of the computer you downloaded the antivirus software to.
4. Copy the antivirus file to the flash drive.
5. Eject the flash drive from the download computer.
6. Insert the flash drive into one of the Election Administration Station or ScanStation computers.
7. Copy the antivirus file to that computer.
8. Eject the flash drive from that computer.
9. Double-click the antivirus file to launch the installer, and follow the instructions onscreen to complete the installation.
10. Repeat steps 7 through 9 on each Election Administration Station and ScanStation computer.

### 5.2.2 Enabling Windows Defender real-time protection

Real-time protection by Windows Defender must be enabled.

#### On a Windows 7 system

To enable real-time protection on a Windows 7 system:

1. From the Windows **Start** menu, search for defender.
2. From the search results, select **Windows Defender**.  
The Windows Defender configuration interface appears.
3. Click **Tools > Options > Real-time protection**.
4. Check **Use real-time protection (recommended)**.
5. Click **Save** and exit.

#### On a Windows 8.1 Pro system

To enable real-time protection on a Windows 8.1 Pro system:

1. From the **Start** page, search for defender.
2. From the search results, select **Windows Defender**.  
The Windows Defender configuration interface appears.
3. Click **Settings > Real-time Protection**.
4. Check **Turn on real-time protection (recommended)**.
5. Click **Save changes** and exit the dialog.

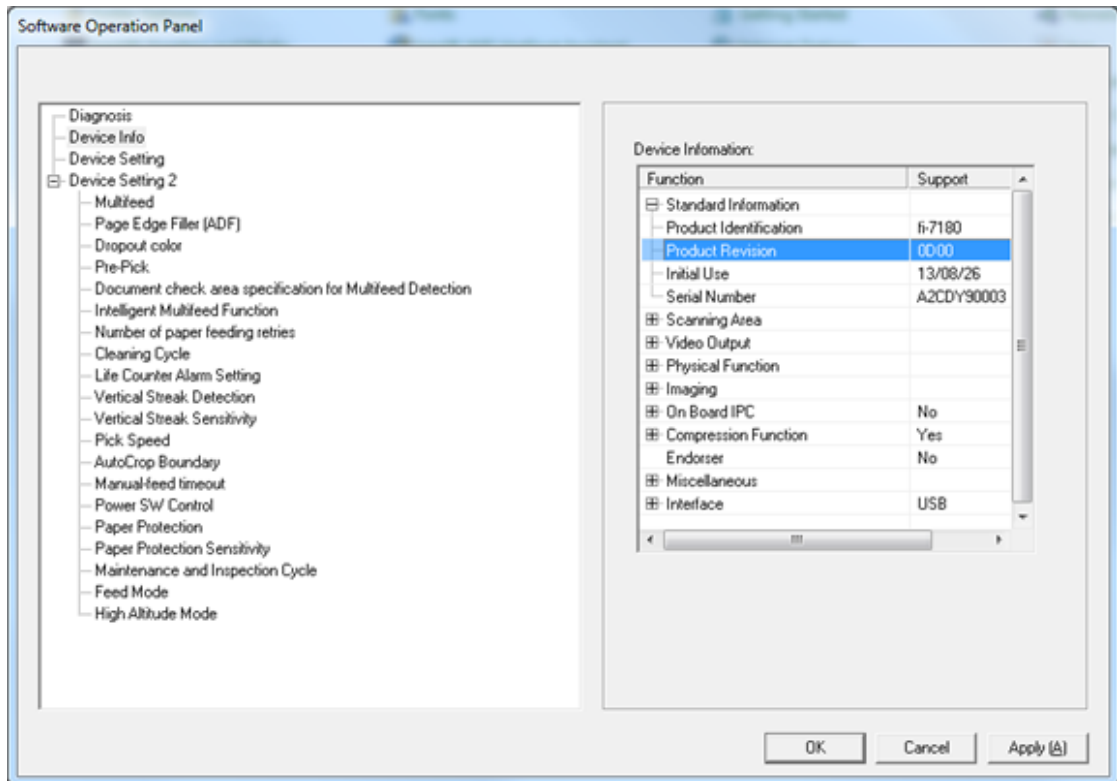


### 5.3 Hardening scanners

To harden each scanner so that its firmware is protected, do as follows:

1. Verify the firmware through the Fujitsu Software Operation Panel:
  - a. From the Windows 8 Home page, enter **Software Operation Panel**.
  - b. From the search results, select **Software Operation Panel**.

The Software Operation Panel appears.



**Figure 5-1. Fujitsu Software Operation Panel**

- c. From the left pane, select **Device Info**.
- d. From the right pane, expand **Standard** information.
- e. Note the values of Product Identification (scanner model), Serial Number, and firmware version.

### 2. To protect the firmware:

- a. Apply tamper-evident tape on the screws along the bottom exterior of the scanner.
- b. Press down the tape around the outside of each screw.

The secured tape is a seal that deters and provides evidence of any manipulation of the scanner firmware.

### 3. Monitor the scanner for evidence of tampering.



In the event of detecting unauthorized access to scanner firmware, a jurisdiction must contact Clear Ballot and Fujitsu. *Only* a licensed Fujitsu support technician can reinstall the proprietary scanner firmware.

## 5.4 Hardening the router or switch

There are no actions that harden physical or software aspects of the router or switch. Instead, the hardening of a router or switch involves limiting both physical access to the router and its connections. No connections can be made to a system that is not part of the ClearCount configuration. At no point can the router or switch be connected to any outside network.

## 5.5 Logging unapproved processes

Attempts to access restricted or unapproved processes on the ScanStations or Election Administration Stations are logged in the Windows Event Log.

## 5.6 Location security

Maintaining physical security of the ClearCount system is an important part of its operation and maintenance. When the components of the ClearCount system are not in use, they must be stored in a locked area under the custody and control of the jurisdiction. Access to this area must be controlled by the jurisdiction so the system cannot be accessed by unauthorized individuals and so that any breaches in security can be recognized through the auditing functions of the system.

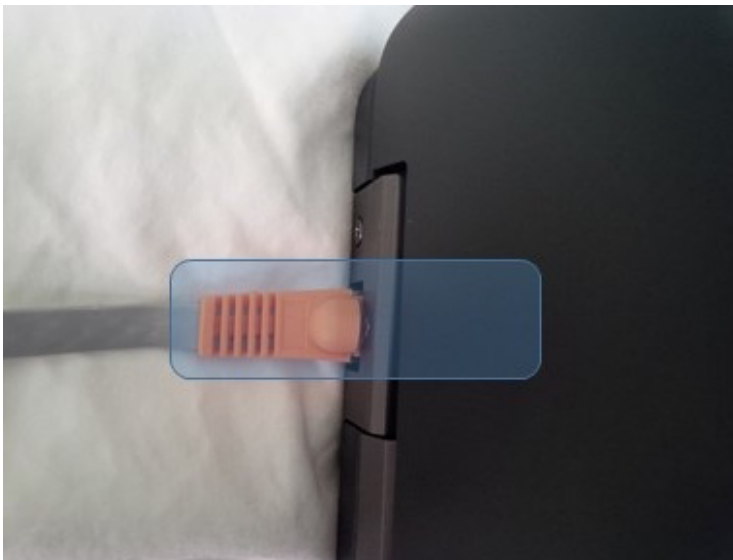
When in storage or in use, the ClearCount system must be kept within a controlled area where only individuals authorized by the jurisdiction to handle and process ballots or maintain the voting system can come into direct contact with the ballots or components of the system. Each jurisdiction must also follow all jurisdictional and state rules for the handling and processing of ballots in addition to this Clear Ballot procedure. This means that one or more of these security methods are employed to provide both deterrence as well as physical security:

- Receptionists or guards with a gate or other barrier to the scanning area.
- Security cameras.
- Electronic door locking mechanisms such as ID cards or key fobs that record the identity of the device used to unlock the door.
- A locking computer rack or other cabinet to contain components of the ClearCount system.



The ScanServer and attached router, as well as all data cable connections in the ClearCount system are especially security sensitive. When in use, segregate and enforce enhanced security over the ScanServer, the ClearCount closed network router, and the Ethernet cable connections to the ScanStations and if present, any Election Administration stations on that closed network. As mentioned elsewhere in this section, placing the ScanServer and router in a locked computer rack or an adjacent secure area, away from the scanner operators is needed to maintain a proper system security posture for ClearCount. Likewise, the jurisdiction must use cable locks or tamper evident seals to provide an enhanced level of security over the cable connections within the system.

The following figure is a simplified view of the application of a tamper-evident seal to cable connections. Use tamper-evident tape to implement a seal that deters and provides evidence of any manipulation of Ethernet connections. Apply the tape as shown, taking care to bridge the computer body and Ethernet cable. (The tape can instead be applied to the underside of the computer.) Ensure every portion of the length of the seal is pressed against the computer body, cable connector, or the cable itself for best tamper evidence.



**Figure 5-2. Application of tamper-evident seal for Ethernet connections**

The jurisdiction must record whenever the ClearCount system is brought out of storage, then after setting up the system examine the following logs to determine if any unauthorized access occurred while the system was not officially in use:

- The Web Activity Log, which tracks ScanServer access.
- The Windows Event Logs on each ScanStation and Election Administration Station computer. (See Viewing the Windows Event Log on page 78).

If there is a break in the custody and control of the jurisdiction, the jurisdiction must reverify the integrity of the system and if necessary reinstall it.

At no point can any unauthorized hardware be connected to the system. The tamper evident tape seals shown above can be applied to cover the Ethernet ports in ScanServer and ScanStation computers to deter unauthorized connections. If an unauthorized connection does occur, system integrity must be reverified.

### **5.6.1 Physical setup**

Setting up the scanning location on page 112 provides detailed instructions on setting up the work area where the scanning process takes place. This setup facilitates the scanning process while also protecting the integrity of the ballots.

Clear Ballot setup instructions include the configuration of tables as well as the placement of essential equipment in a dedicated scanning area. The equipment layout follows a logical flow. The layout should be in order of the process steps for scanning.

Clear Ballot recommends that the scanning location be located adjacent to the ballot boxes or have the capacity to store and manage all the ballots to be scanned. This minimizes potentially destabilizing ballot transit time and enables all workers to view the entire operation. Mistakes in ballot handling, recording, or scanning can be caught and corrected by other members of the election staff if a single worker or team is engaged in a questionable behavior.

If sufficient space to manage and scan all of the ballots is not available in a single section of the scanning location, then the jurisdiction must increase the number of staff dedicated to ballot preparation and record-keeping to ensure proper ballot control and accounting are maintained.

### 5.6.2 Staffing

The scanning location itself must be secured. Unauthorized individuals must not be allowed into the facility. Individuals who are not part of the jurisdiction's permanent staff must sign in and sign out at the entrance. The log of this activity must be maintained.

The Clear Ballot model calls for both supervisors and record keepers to support and monitor the work of ballot preparers and scanner operators. The supervisors and record keepers ensure the smooth flow of ballot processing while keeping an eye on overall process transparency.

The Clear Ballot recommended process takes into account human factors that could potentially destabilize the ballot scanning process. If at any time a scanner operator becomes confused about the appropriate response to a given situation, he or she should stop scanning ballots immediately and alert the supervisor. The supervisor, who has administrator-level access to the system, can log on using a special secured password, resolve any issues, then return control to the scanner operator.

### 5.6.3 Scanning operation workflow

The scanning process begins at the prep station. Ballots are delivered in boxes to the prep station in accordance with the procedures of the jurisdiction for the secure transfer of ballots. The prep station consists of a surface only, because the purpose of this station is simply to unseal ballot boxes (if required), stage ballots for the jogging station, and reseal ballot boxes. It does not matter how many ballots are in each box or the order in which they arrived from the election committee.

Before ballots are brought to the scanning area, the following steps must be completed:

1. Set up a Ballot Preparation Table next to the scanning area.
2. Designate a second area, Ready for Scanning.
3. Print target cards and box labels by counter group (such as AB, EV, ED, or OT).
4. Place target cards and labels under the Ballot Preparation Table.

The prep team assigns target cards and the corresponding labels to the ballot boxes. The correspondence of these two items, as well as proper ballot handling procedures when moving ballots from the scanner outstack to the ballot box, facilitate image-to-ballot traceability™. The purpose of a target card is to inform the scanner that a new box is being scanned and to assign the value of the barcode as the BoxID prefix for all subsequent ballots.



A target card is similar to a header card used by other voting systems.

The purpose of a box label is to help locate the box that contains a ballot needed for physical inspection. Ballots are stored in sequential order, starting with the target card at the bottom of the box.

Additionally, any required ballot box record keeping occurs at the prep station. Typically, the record keeper records all activity surrounding opening, recording, and resealing sealed ballot boxes.

### 5.6.4 Handling of ballot boxes

The ClearCount workflow begins when the boxes of ballots to be counted are delivered to the scanning location. Ballots must be transmitted securely, in keeping with the jurisdiction's policies. For example, it is common for State Police troopers to oversee the secure transport of ballot boxes from precincts to the scanning location.

Once ballots enter the counting place, ClearCount relies on a combination of staffing and site organization to marshal them securely through the workflow.

In the ClearCount setup, all work areas are specially laid out to minimize the possibility of ballot disorder or misplacement. Work areas contain only the necessary elements. There should be no extraneous items (such as extra computer equipment or books) on any of the work surfaces.

ScanStations are designed with an implicit workflow in mind: in a ScanStation, a ballot can be in one of three states: unscanned, scanning, and scanned. There is a designated location for each of these states. Ballots are removed from a box, placed in the unscanned pile to the left of the scanner. They are then sent through the scanner and moved into the box to the right of the scanner once they finish scanning.

The supervisor is responsible for monitoring all operations and ensuring any interruptions in the process flow are dealt with properly and swiftly. The supervisor is also responsible for ensuring proper procedures are being followed to protect the ballot chain of custody and the tabulation process.

The record-keeper tracks all activity surrounding opening and resealing sealed ballot boxes.

The prep staff prepares the ballots for scanning and moves them through the workflow so the scanner operators can focus, uninterrupted, on their task. This improves efficiency and minimizes the potential for confusion and errors.

Scanner operators work on batches of ballots at a time. Their work areas are specially laid out to minimize the possibility of confusion or misplacement. In their training, scanner operators are taught that at the first sign of scanner problems or operator confusion, they should alert the supervisor. The supervisor, meanwhile, is trained to delete boxes from the system so the scanner operator can rescan boxes that caused problems.

When scanning is complete, all ballots are returned to boxes (which now contain target cards and box labels to facilitate ballot retrieval if needed at a later date). The boxes are taken from the scanning area to a secure storage location to ensure they remain protected and to ensure image-to-ballot traceability and system integrity prior to a future audit or recount, until their allowable date of destruction.

## Chapter 6. Setting up the scanning location

This chapter describes how to prepare your physical location for the ballot scanning operation.



Before setting up the scanning location, please familiarize yourself with the physical security requirements described in Hardening, validating, and securing the system on page 101.

### 6.1 Planning considerations

Before you begin setup, you need to determine the scale of your project.

#### 6.1.1 Number of scanners needed

The number of scanners and ScanStations required depends on several factors, including the:

- Number of ballots to be scanned.
- Time constraints on completing the scanning operation.
- The municipality's budgetary constraints.

### 6.2 Planning location requirements

Along with determining staffing and equipment levels, you must also plan the layout of the physical location where scanning takes place. Once the number of scanners and ScanStations has been calculated, the physical location requirements can be determined. The following are the recommended specifications for physical location of the scanning operation as well as the specifications for each of the associated stations.



## 6.2.1 Workstations in a scanning operation

An end-to-end scanning operation requires the following work stations:

### **ScanStation**

Consists of a scanner, a laptop or desktop computer, associated cables, and a surface (typically a portable table) used to place the equipment and to provide space for inbound and outbound ballots. A scanning operation might feature one or more ScanStations.

### **ScanServer**

Consists of a laptop or desktop computer, associated cables and a surface. This station can use a smaller surface than a ScanStation, because no ballots or scanners are present. A scanning operation features a single ScanServer.

### **Election Administration Station**

Consists of a laptop or desktop computer and a surface. This station can use a smaller surface than a ScanStation, because no ballots or scanners are present. A scanning operation might feature one or more Election Administration Stations.

### **Ballot preparation/jogging station**

Consists of a ballot jogger (used to align ballots prior to scanning, helping to eliminate misfeeds and ensuring consistent ballot speed throughput) and space for unjogged and already jogged ballots. This station typically uses a surface the same size as the ScanStation.

### **Ballot handling station**

Consists of a flat, clear surface. The purpose of this station is to unseal ballot boxes (if required), apply box labels, stage ballots for the preparation/jogging station and to reseal ballot boxes. Additionally, all ballot box record keeping occurs here as required.



For both security and organizational reasons, there should be no extraneous items such as notebooks, folders, or coffee cups on any of these surfaces.

### 6.2.2 Physical location considerations

The following factors should be considered when choosing the physical location for the scanning operation:

#### **Proximity of ballots**

Depending on the scale of the election jurisdiction, consideration should be made for the transfer of ballots to the physical scanning location if required. The scanning location should either be located adjacent to the ballot boxes or the scanning location should have the capacity to securely store and manage all the ballots to be scanned.

#### **ScanStation space**

Four feet of space behind each station is recommended so that scanning operators and support personnel can pass unobstructed to and from ScanStations and preparation/jogging station to deliver and retrieve ballots.

#### **Electricity**

Each ScanStation requires two electrical sources. The ScanServer station, Election Administration Station, and preparation/jogging stations require one each. Be prepared with extension cords and power strips to suit the scale of your scanning operation. Consider the number of electrical outlets as well as their proximity to the scanning operation.

### 6.2.3 Physical requirements for workstations

The workstations in a scanning operation have the following physical requirements:

#### 6.2.3.1 ScanStation physical requirements

Weight	Surface dimensions
The surface or table must be capable of supporting the weight of the scanner, computer, and ballots. The heaviest component is typically the scanner.	A minimum of six linear feet and a depth of no less than 2.5 feet per ScanStation is recommended.
Here are the scanner weight specifications:	
<ul style="list-style-type: none"><li>• fi-5950: 110 lb</li><li>• fi-6670: 37 lb</li><li>• fi-6140: 10 lb</li><li>• fi-6800: 70 lb</li><li>• fi-7180: 10 lb</li></ul>	

---

#### 6.2.3.2 ScanServer/Election Administration Station physical requirements

Weight	Surface dimensions
Minimal.	Sufficient space for a large laptop computer. (If the ScanServer is running on a desktop computer, determine required space accordingly.)

---

#### 6.2.3.3 Preparation/Jogging Station physical requirements

Weight	Surface dimensions
30 lbs.	Six linear feet and a depth of no less 2.5 feet per station is recommended.

---

#### 6.2.3.4 Ballot Handling Station physical requirements

Weight	Surface dimensions
30 lb	Six linear feet and a depth of no less 2.5 feet per station is recommended.

---

### 6.2.4 Scanning operation physical layout best practices

The following figure illustrates the best practice physical layout for a scanning operation, assuming four ScanStations, one ScanServer station, one Election Administration Station, one jog station, and a ballot prep station. All four ScanStations are connected to the ScanServer station using a router and an Ethernet network.

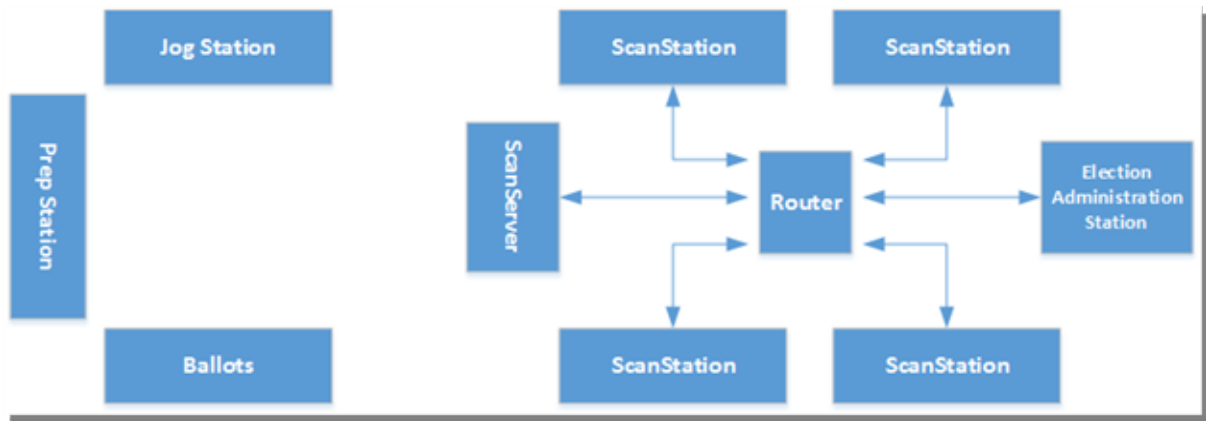


Figure 6-1. Example of scanning area physical layout

### 6.2.5 Scanner area guidelines

The scanning area is where the ballot scanning process takes place. The area must hold computers, scanners, boxes, labels, and thousands of ballots. You need approximately six feet of table space in order to accommodate a ScanStation's computer, scanner, and ballots. Lack of space can lead to disorganization and mistakes.

There should be a logical flow to the layout of your equipment. The ScanStation layout should match the order of the steps of scanning. The scanning process begins with receipt from the prep station of a labeled box containing ballots and a target card. These ballots become the input to the scanner, so the box should be unpacked and the ballots placed to the left of the scanner. The empty box should then be moved to the right of the scanner, either on the table or on the floor directly in front of it. The ScanStation computer, meanwhile, should be either in front of or directly beside its scanner. After the ballots are scanned, the scanner operator places them, face down, into the output box. Upon completion of the box, the scanner operator should initial the box label on the box, to indicate that the box has been scanned.

### **6.2.6 ScanServer area guidelines**

The ScanServer connects physically to all ScanStations through the router, so it needs to be located in close proximity to them. However, the scanning team does not physically interact with the ScanServer.

### **6.2.7 Election Administration Station area guidelines**

The Election Administration Station does not require a large surface, because it does not have to hold a scanner or ballots. However, users interact with the Election Administration Station, so it should be placed in an area with enough space for one or two chairs to be placed in front of it.

### **6.2.8 Preparation station guidelines**

This is the location where the process begins, with ballots being delivered in boxes from the election committee. The ballot prep station consists of a surface only, because the purpose of this station is simply to unseal ballot boxes (if required), stage ballots for the jogging station, and reseal ballot boxes after scanning. Additionally, any required ballot box record keeping occurs here.

The record keeper records all activity surrounding opening, recording, and resealing sealed ballot boxes or bags.

### 6.2.9 Jogging area guidelines

A stack of ballots might not be in optimal condition for scanning. As a result, you may need to "jog" the ballots (that is, adjust them so they form a more orderly, uniform stack) before placing them into the box. A properly jogged stack of ballots is much less likely to result in a paper jam or misfeed. Within the jogging area, there needs to be a centralized jogging machine to jog the ballots.

Additionally, target cards and box labels are affixed here. Affixing the box label coincides with assigning a target card to a batch of ballots, as they both contain the batch IDs. For example, if the target card indicates a batch ID of ED-11, then you would affix a label marked ED-11 to the box where the ballots are to be placed. This helps to identify the location of the ballots during the ballot verification process.

The key tasks of the jogging area staff include:

- a. Jogging the ballots.
- b. Assigning a target card to each batch of ballots.
- c. Affixing all labels to boxes.
- d. Delivering boxes to and retrieving them from each ScanStation.

### 6.2.10 Security considerations

For security purposes, there *cannot* be WiFi components on the computers used in the ClearCount system. The connection between the ScanStations and the ScanServer must always be by wired Ethernet.

## 6.3 ScanStation equipment connections

After the equipment is set up, it must be connected as follows:

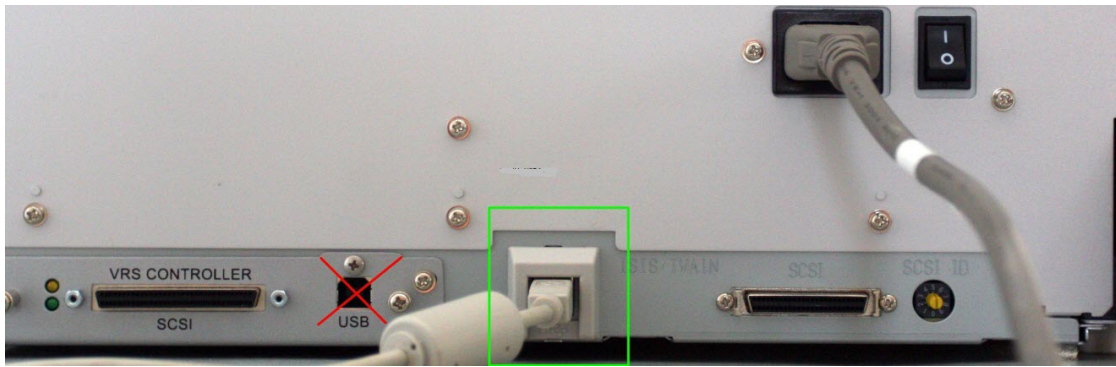
- Each scanner must be connected to its ScanStation computer.
- Each ScanStation computer must be connected to the Ethernet network.

Each scanner has a number of ports on the rear panel, as shown in the following figures. The Power and USB ports are used.



Scanner models fi-6800 and fi-6700 may have two square USB ports on the rear panel. These ports are not interchangeable. The USB cable must be plugged into the correct USB port as indicated by the highlighted squares in the following photos.

**Model fi-6800**



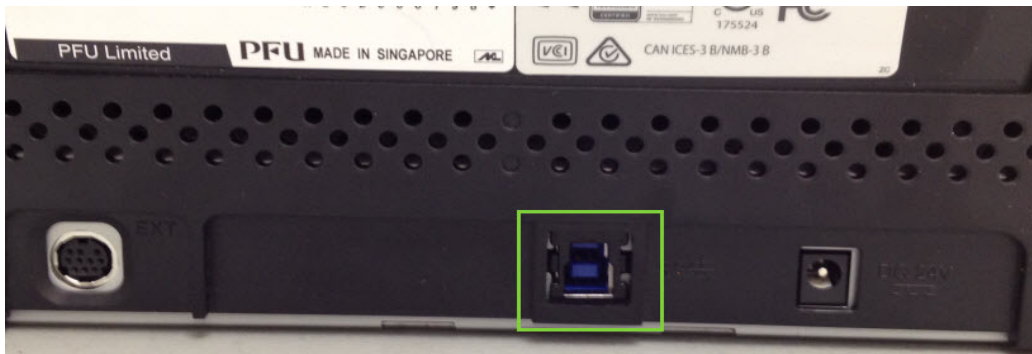
**Figure 6-2. USB Port for the fi-6800**

**Model fi-6670**



**Figure 6-3. USB Port for the fi-6670**

**Model fi-7180**



**Figure 6-4. USB Port for the fi-7180**

**Model fi-6140z**



**Figure 6-5. USB Port for the fi-6140z**

**Model fi-5950**



**Figure 6-6. USB Port for the fi-5950**



Two cables are required for each scanner:

- The power cable, which must be attached to the three prong male outlet on the back and then to a working power supply. The following figure shows the cable for fi-6670 and fi-6800. (The fi-7180 uses a circular pin-type electrical connector with adapter.)



**Figure 6-7. Power Cord**

- A USB cable, which has a small square connection on one end and a flat, rectangular connector on the other. The square end is placed into the similarly sized outlet on the back of the scanner, while the flat, rectangular connector should be placed into a USB port typically found on the back or sides of the computer.



**Figure 6-8. USB Cable**

The following figure shows a USB cable inserted into the USB connection on a laptop.



**Figure 6-9. USB Cable in a Laptop**

Finally, the computer must be connected to the network so the scanned images and data files can be sent to the ScanServer. The cable used is a standard Ethernet network cable as shown in the following figure.



**Figure 6-10. Ethernet Network Cable**

Each end of the Ethernet network cable is identical. One end is inserted into the network port on the computer and the other end is inserted into the network router. Additionally, the computer power cable must be attached to a working power supply.

The following figure shows an Ethernet cable plugged into a laptop computer.



**Figure 6-11. Ethernet Cable in a Laptop Computer**

### 6.3.1 Turning on the hardware

After all the cables are connected, you can power on the elements of the ClearCount system.

- To turn on the router, press its power switch.
- To turn on the scanner, press the power switch at the back of the scanner *and* the power button.

The power button is located on the front of the fi-6800 and fi-7180 scanners, and on the side of the fi-6670 scanner.

- To turn on each computer, press its power switch.

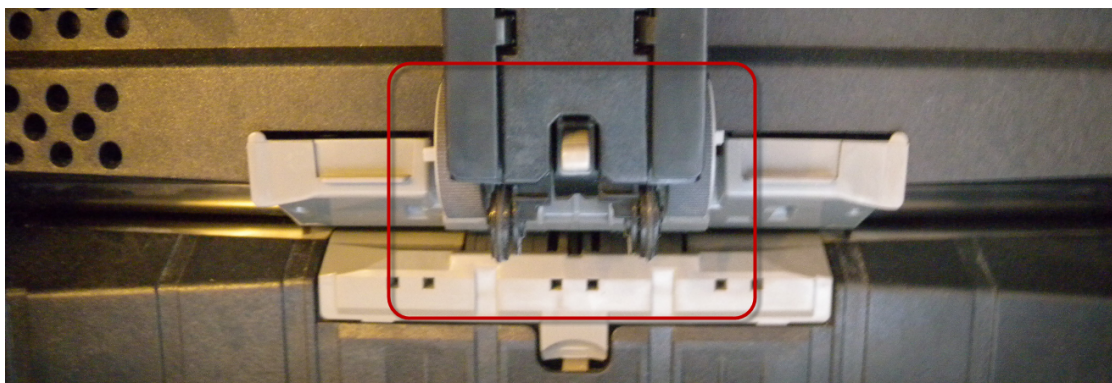
## 6.4 Preparing the scanner input and output mechanisms

After setting up the scanners, you need to configure a few of their physical aspects.

### 6.4.1 Automatic document feeder setup on the fi-6800

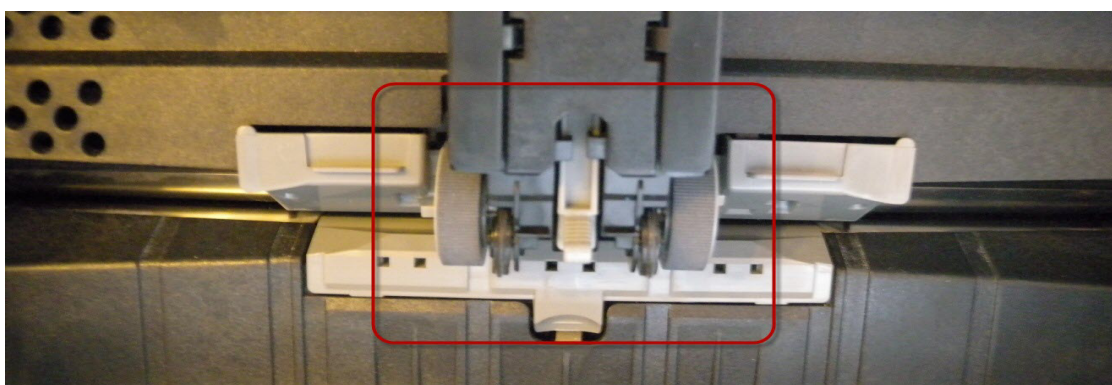
For the scanner to successfully complete a batch scan on the fi-6800, the Automatic Document Feeder (ADF) lever in the input hopper must be in the down position. When the gray lever is up (that is, within the housing case), the ADF is not ready to guide documents into the scanner, and the scanner cannot function properly.

The following shows the ADF lever in the up position (not ready to scan):



**Figure 6-12. ADF lever in the up position on the fi-6800 scanner**

Pull the gray lever down as shown to allow the ADF to assist in gathering documents to ensure the scanner can function properly.



**Figure 6-13. ADF lever in the down position on the fi-6800 scanner**



### 6.4.2 Input and output tray setup

It is important to adjust the input and output trays or hoppers to accommodate the ballots being scanned. Ensure the trays are extended enough to properly hold the full length of the ballot. Adjust the wings of the tray to loosely touch the edge of the ballots. Wings that are too tight can result in twisted images, and wings that are too loose can increase the risk of multifeeds and paper jams.

The following figure shows the trays and wings of a scanner.



**Figure 6-14. Scanner Trays and Wings**

## Chapter 7. About target cards and box labels

Before beginning the scanning process, you must print target cards and box labels.

- A *target card* identifies a batch or box of ballots. It informs the scanner that a new box is being scanned and assigns the value of the barcode as the box ID prefix for all subsequent ballots. (It is similar to the header card used in other election systems.) A target card is typically printed on letter- or legal-sized card stock.

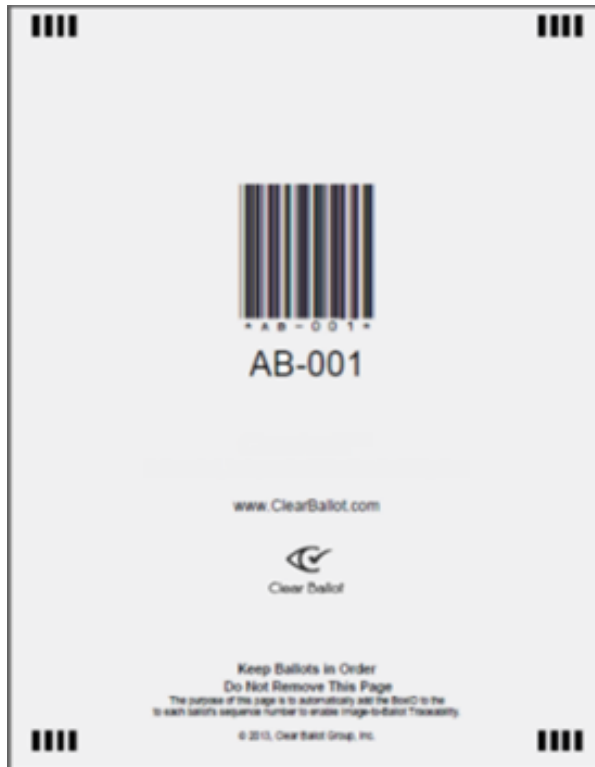


Target cards are *not* election-specific.

- A *box label* physically identifies each box and the corresponding ballots. Like target cards, box labels contain unique identifiers. The box label is affixed to the outside of the ballot box and should be consistently placed in the same location (such as the upper right corner) to aid in quickly identifying ballot boxes. Box labels are typically printed on Avery 5163 (2 inches x 4 inches) label stock, with 10 labels per sheet.

Ballots within a box are in sequential order starting with the target card at the bottom of the box. When a ballot is scanned, the front and back images are each given a unique identifier (such as ED-001+00001 and ED-001+00002) corresponding to the batch or box (ED-001) and image file (+00001).

The following figures show examples of a target card and box labels.



**Figure 7-1. Sample target card (not actual size)**




**Figure 7-2. Sample box labels (not actual size)**

## 7.1 Naming of ballot image files

The naming convention for ballot image files is:

*CounterGroup-BoxID+BallotSequenceNo.jpg*

where:

- *CounterGroup* is the category of the ballots. Commonly used names include Absentee (AB), Early Voting (EV), Election Day (ED), Provisional (PR), Other (OT), and Ten-Day (TD).
-  Counter group names are defined in the Ballot Definition File for an election and can comprise up to eight ASCII uppercase characters (A-Z).
- *BoxID* is the box sequence number.
- *BallotSequenceNo* is the cardinal number of the image. Front sides are odd and back sides are even. Target cards use 10001 and 10002 for their sequence numbers.

The purpose of this naming convention is to provide reliable *image-to-ballot traceability*, which makes it possible to retrieve an original ballot with precision.

The following table provides some examples.

**Table 7-1. Ballot image file naming examples**

Ballot description	Image file
Front of AB Target	AB-004+10001.jpg
Back of AB Target	AB-004+10002.jpg
Front of 1 <sup>st</sup> AB Ballot	AB-004+10003.jpg
Back of 1 <sup>st</sup> AB Ballot	AB-004+10004.jpg
Front of 2 <sup>nd</sup> ED Ballot	ED-001+10005.jpg



## 7.2 Downloading the target card and box label source files

Clear Ballot provides PDF file versions of the target cards and box labels that you can print on site prior to the scanning process.

To download the target card and box label PDF files:

1. On a computer connected to a laser printer, navigate to the download area of the Clear Ballot web site (<http://clearballot.com/Support/TargetsAndLabels>).
2. Follow the instructions on the screen to download the necessary files.

To print target cards and box labels:

1. Open the directory holding the downloaded PDF files.
2. Locate and open the file for the particular target card or box label you want to print.
3. Print the contents of the file, following the guidelines in Printing target card and box labels below.



Quantity defaults to 500 or 1000 target cards. Ensure the printer is set up for the required number of cards.

## 7.3 Printing target card and box labels

Target cards and box labels can be printed normally, keeping the following guidelines in mind:

- Target cards should be printed on heavy (65 lbs. or greater) card stock.
- Target cards should be printed on white card stock.
- Target cards and box labels should be printed on a laser printer. Target cards and box labels contain bar codes which might not be readable if printed on an inkjet or similar type of printer.

### 7.3.1 Estimating printing requirements

The number of targets cards and box labels to print is determined by the number of boxes for each type of ballot for the election.

- For Election Day at the polling place, print one target card per polling place or precinct and/or scanner (for precincts that fill more than one box).
- For other counter groups, such as Absentee (AB), Early (EV), Other (OT), Ten-Day (TD), or Provisional (PR), print one target card for every 700 ballots expected.
- For corresponding box labels, follow the same guidelines and divide by 10. (Each sheet has 10 labels.)

Approximately 10% more targets cards and box labels should be printed than the number of corresponding ballot boxes, in case additional target cards or box labels are required during the scanning process due to ballot handling issues or scanning errors.



In elections with multipage ballots, multiply the calculated number of target cards and box labels by the number of pages in a ballot to get the proper total.

## 7.4 Paper requirements

For best scanning results, Clear Ballot recommends the use of paper weights between 65 and 110 lbs.



ClearCount does not support ballots or target cards printed on colored paper.

## Chapter 8. Creating elections and users

Before scanning, you must create the election as well as users. The following privileges are required to create and manage:

- Elections - Access level of dbadmin or above.
- Users - Access level of useradmin or above.



This chapter contains instructions on creating elections and users. For instructions on modifying, deleting, or otherwise managing elections and users, see *ClearCount Election Administrator's Guide*.

### 8.1 Logging in as administrator

You log in to the administration pages using the DNS name for your ScanServer that you set up during installation as your browser URL. For example:

http://ScanServer

In the **Login** dialog, enter the administrator's username and password created during the ClearCount installation.

The image shows a web-based login dialog for ClearCount. At the top is the Clear Ballot logo, which consists of a stylized 'C' with a checkmark inside. Below the logo is a green rectangular box containing the text: "Please provide a username and a password to sign in." Underneath this box are two input fields: the first is labeled "Username" and the second is labeled "Password". At the bottom of the dialog is a blue rectangular button with the text "Sign In".

Figure 8-1. ClearCount Login dialog

## 8.2 Election naming rules and conventions

Election names must conform to the following rules:

- Maximum of 64 characters.
- May consist of lower- or uppercase letters, digits (0–9), underscores (\_), and dollar signs (\$).
- May begin with a digit but may not consist solely of digits.
- May not contain forward slashes, backslashes, periods, colons, or any other character not allowed in a typical file name in a folder.
- May not contain single quotation marks, double quotation marks, or backticks (grave accents).
- May not end in a deliberate space.

For ease of use, Clear Ballot recommends that you name your election following the convention used to name the associated BDF:

*StateAbbreviation\_JurisdictionName\_ElectionNameAndType*

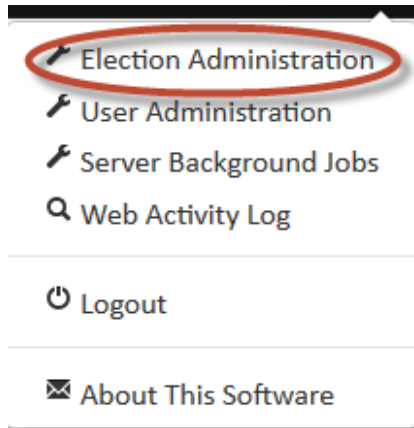
For example:

ny\_montgomery\_2012g

## 8.3 Creating an election

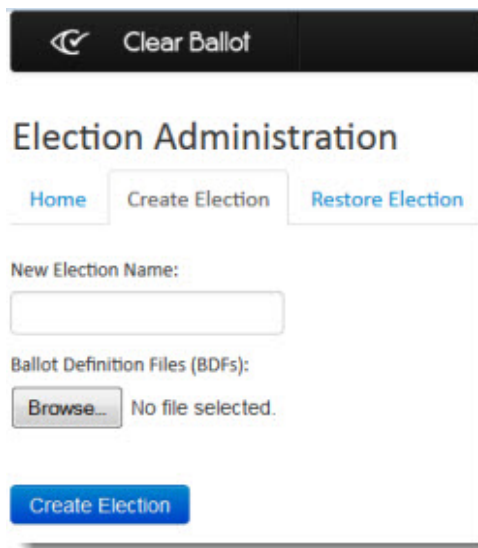
To create the election:

1. Ensure a zip archive of its Ballot Definition File (BDF) resides on the Election Administration Station.
2. On the Election Administration Station, open a browser.
3. [Log in to ClearCount as administrator.](#)
4. From the **Election Index** page, click the down arrow next to the user name (the login dropdown list) and then click **Election Administration**.



**Figure 8-2. Election Administration menu item**

5. In the **Election Administration** page, click the **Create Election** tab.

The screenshot shows a web interface for "Election Administration". At the top, there is a dark header bar with a back arrow icon and the text "Clear Ballot". Below this, the main title "Election Administration" is displayed. Under the title, there are three tabs: "Home", "Create Election" (which is highlighted with a blue border), and "Restore Election". Below the tabs, there is a section for "New Election Name:" with an empty text input field. Underneath that is a section for "Ballot Definition Files (BDFs):" which includes a "Browse..." button and the text "No file selected.". At the bottom of the form, there is a blue button labeled "Create Election".

**Figure 8-3. Create Election tab**

6. From the **Create Election** tab, do the following:
- Enter the new election name, following the guidelines in Election naming rules and conventions on page 132.
  - Browse to and select the BDF for this election. The relevant BDF zip file was provided by Clear Ballot.
  - Click **Create Election**.

A new election is created and set as the active election. Newly scanned ballots are considered to be part of the active election.

## 8.4 Creating Election Administration Station users

After you create the election, you add users and assign them the appropriate level of access. Each ClearCount user on your staff should have their own user account, set with the precise permissions this user is allowed. By giving each user a separate account, you can clearly identify each logged action by user.

All user names and passwords must satisfy the rules, and should meet the guidelines, provided in *ClearCount Election Administrator's Guide*.

The following table describes increasing levels of access. Each level also includes the privileges of any preceding level.

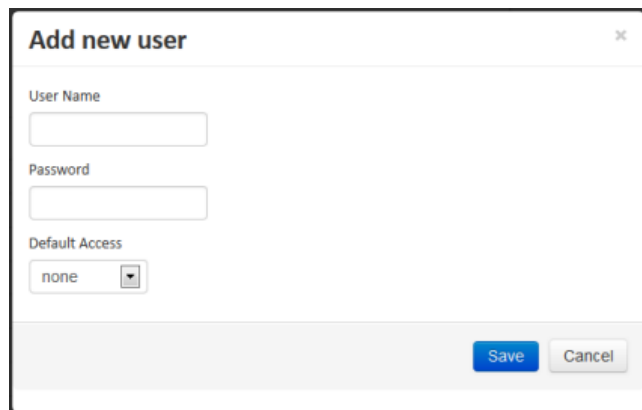
**Table 8-1. User access levels**

Access level	Description
none	No access to the system allowed. This setting may be used to toggle a user's access without deleting the user.
read	User can view election reports, but he or she cannot modify anything.
append	User can add new database ballot records or new ballot images by scanning. The ScanStation user has this level of access.
modify	User can modify existing contents of the election through tools that allow remaking or correcting.
dbadmin	User can add or delete election databases as well as change a database's status. The dbadmin can give themselves modify access to any new database they create.
useradmin	User account management (the ability to add, modify, or delete users).

### 8.4.1 Adding a user

To add a user:

1. In the **User Administration** page, click the **Browser Users** tab.
2. Click **Add User**.
3. In the **Add new user** dialog, enter a user name and password for this user, and then choose their access level from the **Default Access** dropdown list. (User access levels are described in the [User access levels](#) table.)



The image shows a dialog box titled "Add new user". It has three input fields: "User Name", "Password", and "Default Access". The "Default Access" field is a dropdown menu currently showing "none". At the bottom right of the dialog are two buttons: "Save" and "Cancel".

**Figure 8-4. Add new user dialog**

4. Click **Save**.

## 8.5 Preparing the zero report

After creating the election but before scanning any ballots, you can create a zero report to prove that all vote totals are set to zero at the start of the election.

To produce the zero report:

1. [Log in to ClearCount as administrator.](#)
2. In the **Election Index**, select the election.
3. In the **Dashboard**, from the **Report for Election\_Name** dropdown list, click the **Statement of Votes Cast**.
4. Copy or print the report as needed. A copied report may be pasted into Notepad and copied onto a flash drive for further distribution.



## 8.6 Importing the CRF file

In order to see the ClearCount comparison reports, you must import the Comparison Results File (or CRF). For more information about the CRF, see About Comparison Result Files on page 5.

To import the CRF:

1. Copy the file onto the Election Administration Station.
2. In the **Election Administration** page, locate the row for the election you want to compare.
3. Click the button in the **Actions** column and select **Import Comparison Results (CRF)**.

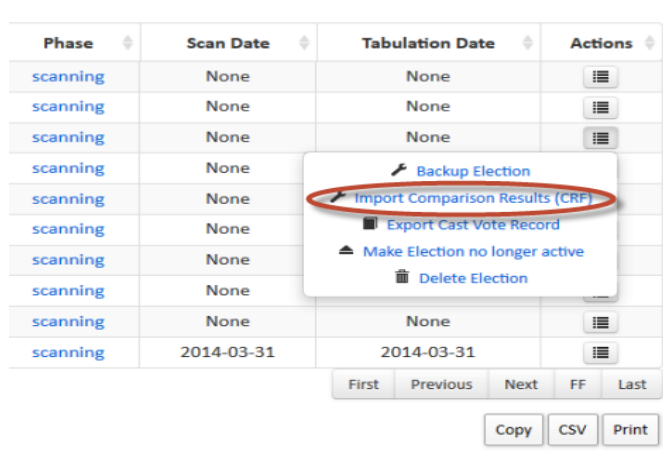


Figure 8-5. Import Comparison Results menu item

4. In the **Import Comparison Results File (CRF)** dialog, browse to the CRF file that you want to import and click **Import**.

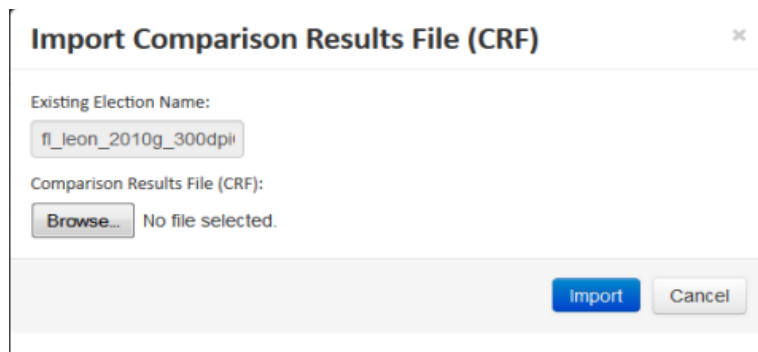


Figure 8-6. Import Comparison Results File dialog

## Chapter 9. ClearCount readiness testing

This chapter describes the recommended workflow for ClearCount readiness testing. Readiness testing ensures the system is in proper working order prior to the start of the election.

All hardware that may be used in the election must go through readiness testing, and data that verifies equipment must be obtained for it. Therefore, if the jurisdiction intends to keep backup hardware on hand, the backup hardware must go through readiness testing.

While not required, Clear Ballot recommends that the jurisdiction run additional test ballots through the system to confirm that all ballot styles and counter groups are handled appropriately.



Readiness testing parameters may be governed by local statute. Make sure you take local regulations into account as part of this process.

### 9.1 Retesting the scanner cameras

The accuracy of the system depends not only on the correctness of the election definition, but also on the proper functioning of the scanning equipment. The following test ensures the scanners' cameras accurately record the images on both sides of the ballots. This test requires a calibration card and one representative ballot of the same size planned for the upcoming election.

#### Obtaining the calibration card

Print the two-sided calibration card at actual size (*not* fit to page) in landscape orientation from Clear Ballot's website ([www.ClearBallot.com/Support/CalibrationCard](http://www.ClearBallot.com/Support/CalibrationCard)). Depending on your browser, you may need to print using the system dialog in order obtain the landscape orientation option.

#### Testing the cameras

To test the cameras, do the following for each scanner in the ClearCount system:

1. [Run the update script](#) to configure scanner settings.
2. Run the calibration card and the representative ballot card through the scanner. This produces four JPEG (.jpg) files, one for each side of each card.

3. Open the folder C:\CBGBallotImages and examine the four JPEG files that start with the prefix SEPARATOR. Look for the following:
  - Both the front and back image of the calibration card are examined for any distortion in the image. Lines should be sharp and straight. If there is distortion, contact Fujitsu to service the scanner prior to using it in the election.
  - Both the front and back image of the representative ballot are examined to ensure the entire ballot image is visible and that nothing was cropped out by the scanner. If the ballot image appears cropped, contact Clear Ballot Customer Support.
4. When the test is complete, delete the four images from C:\CBGBallotImages.

## Chapter 10. ClearCount Logic and Accuracy testing

Performing Logic and Accuracy (L&A) testing on the ClearCount system consists of scanning a set of test ballots into the database created for the upcoming election and then backing up and deleting the test data. This test must be performed on at least one ScanStation. This test should be performed after readiness testing has been completed.

Before doing L&A testing, do readiness testing to ensure every scanner works.



L&A testing parameters may be governed by local statute. Make sure you consult with election officials as part of this process.

### 10.1 Logic and Accuracy testing workflow

After you install the ClearCount software, use the following steps to test the system.

1. Create an election using the BDF provided by Clear Ballot. This election is used for the L&A test as well as for the election itself. For details on how to create an election, see *Creating an election* on page 133.
2. Log in to ClearCount on the Election Administration Station and open the **Statement of Votes Cast** report. (See *ClearCount Election Administrator's Guide* for details.) Use this report to ensure all contests and choices:
  - Are accurate.
  - Have zeroes in their totals.



The empty Statement of Votes Cast is the zero report for the ClearCount system. The report can be printed or exported if needed.

Report any problems or unexpected results to Clear Ballot Technical Support.

3. Log out of ClearCount.
4. Mark a set of test ballots, making sure that each position is marked and each vote rule tested for each ballot style.
5. Print one target card for each counter group being used in the audit part of this election. For details on printing target cards, see Chapter 7.

6. For each ScanStation being used for the L&A test, verify the following:
  - a. Using any of the target cards, scan the entire test deck. (See *ClearCount Election Administrator's Guide* for details.)
  - b. On an Election Administration Station, log in to ClearCount and open the **Statement of Votes Cast** report.
  - c. Verify that the total results match the expected results for the test deck. (The report may be printed or exported if needed.)
  - d. Back up the election. (See *ClearCount Election Administrator's Guide* for details.)
  - e. Log out of ClearCount.
  - f. Delete the box. (See *ClearCount Election Administrator's Guide* for details.)
7. After all scanners are tested, ensure all boxes are deleted by logging in to ClearCount, opening the **Statement of Votes Cast** report, and making sure that all contests and choices have zeroes in their totals.
8. Following the test, secure the ScanStation and ScanServer computers until they are needed to process the audit.

## Chapter 11. Uninstalling ClearCount

### 11.1 Uninstalling the ClearCount Software from the ScanServer



You do not have to uninstall an older version of ClearCount before installing a newer version.

If you need to remove the ClearCount software, wipe the hard disk on the ScanServer computer.

### 11.2 Uninstalling supporting software from ScanStations

To uninstall supporting software from ScanStation computers, see the appropriate one of the following guides:

Application	Product documentation
ScandAll PRO 2.0 Premium	ScandAll PRO Release Notes
TWAIN drivers	Fujitsu TWAIN 32 Scanner Driver User's Guide

## Chapter 12. Breakdown and storage

This chapter describes how to break down and store the ClearCount equipment after an election.

### Breaking down the ClearCount system

After the election, all ClearCount hardware components should be powered down, physically unplugged from their power supply and from the router, and packed. Clear Ballot recommends that jurisdictions pack, transport, and store the hardware used in the ClearCount operation in its original boxes. Alternatively, jurisdictions have the option of purchasing custom scanner storage cases from a third-party manufacturer. For details, contact your Clear Ballot representative.

The scanners used with ClearCount *must* be cleaned before being stored, following the procedures outline in the **Fujitsu Scanner Operator's Guide** for that scanner model. In addition, while the scanners are opened for cleaning, check the rollers for unevenness or other signs of wear, and if necessary, schedule a Fujitsu service visit for prior to the next election.

### Storing the ClearCount system

In between elections, jurisdictions are expected to store computers and scanners in a secure, climate-controlled location. Jurisdictions should consult the model-specific documentation for their commercial hardware to obtain specific guidance. At a minimum, the following conditions for storage are required:

- 15 – 35 degrees C
- 20 – 80% humidity

# Appendix A. ClearCount installation checklist

Individuals who install ClearCount software can use this form to record the various user names and passwords they create during the installation.



The ClearCount administrator or other responsible person must store this confidential information in a safe and secure location.

1. IP Address for the Server	
2. IP Address for the Router	
3. ScanServer Hostname	
4. Linux Administrator Username	
5. Linux Administrator Password	
6. Database Root User Password	
7. ClearCount Admin Username	
8. ClearCount Admin Password	
9. ScanStation Password	
10. BIOS Password	



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