Indications for Use

PACS Scan is intended to be used by authorized staff to perform various operations on imaging studies before they are made available to other locations in the network. These operations include scanning documents and/or film images, capturing video images, confirming or editing patient demographics, and reviewing the history of the study.

PACS Scan is not labeled for diagnostic use.
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1.1 Starting and Exiting PACS Scan

Start and exit PACS Scan as you would any Windows program. When starting, a splash screen appears with the product name. If the splash screen does not appear, contact a Lexmark Enterprise Software representative. When you exit PACS Scan, the DICOM sending queue stops and all jobs current in the queue are saved. Queued jobs are automatically re-sent the next time you start PACS Scan.

CAUTION

PACS Scan contains many configurations, settings, and other files that can be edited by the user (for example, the xml files in the config folder of the installation directory). However, as such files are critical to proper functioning of the program, editing them is only recommended for experienced users. Contact a Lexmark Enterprise Software representative if you have any questions about making changes to xml or other files.
2 Paper Documents

2.1 Scanning Paper Documents

To scan a paper document, perform the procedure below. To adjust various scanning options such as automatic feed, color mode, and resolution, see 11.1 Paper Scanner Settings.

Procedure

1 Start PACS Scan.
   The main screen appears.
2 In the left pane, click Scan.
   The first time you scan a document for a patient, the Enter Patient Information dialog box appears before scanning begins (see 9.1 Entering Patient Information for more details).
3 Enter patient information and click Continue.
   Paper scanning begins. As you scan each document a thumbnail appears in the thumbnail list. At any time you can click a thumbnail to view and edit the corresponding document.
## 2.2 Batch Scanning

If your paper documents contain barcodes with known accession or order numbers, you can scan documents in batches. When in Batch mode, PACS Scan automatically looks up patient information, attaches the information to the documents, and sends them to PACS. To batch-scan documents, perform the procedure below. To adjust settings, see Batch Settings under Paper Scanner Settings.

### Procedure

1. To clear the current patient, click the clear patient button in the upper-right corner of the viewing area.
2. On the Settings menu, click **Batch Mode**.
   
   A check mark appears next to the Batch Mode command. You can click Batch Mode again to clear the check mark and return to normal scanning mode.
3. Place all of the documents into the scanner feeder.
   
   Make sure that each document has a barcode representing a valid accession or order number.
4. Click **Batch** to begin scanning.
   
   As each document is scanned it is processed and sent automatically to PACS.

5. When all documents have been scanned, verify that they were successfully sent to PACS.
   
   Any document that could not be matched or whose barcode was not found appears in the left pane under Batch List, and must be processed manually.
6. Click an item in the batch list. The scanned image appears along with the Enter Patient Information dialog box. Type or look up the correct information and click **Continue** to send the image to PACS.
3  Films

3.1  Digitizing Films

Digitizing film requires a license for PACS Scan Film. To digitize a film, perform the procedure below. To adjust various digitizing options such as calibration, digital mammography, and resolution, see 11.2 Film Digitizer Settings.

Procedure

1. Disable Batch mode by clicking Settings > Batch Mode to clear the check mark from the Batch Mode command.
2. Click Film.
   If the Film button is not visible even though a film digitizer is installed, click Settings > Buttons, then select the desired button from one of the available lists.

3. Enter the patient information and click Continue.
   Digitizing begins. As you digitize each film a thumbnail appears on the thumbnail list. At any time you can click a thumbnail to view and adjust the corresponding film. You can click Film repeatedly to digitize any additional films that are loaded for a single patient.
3.2 Segmenting Films

PACS Scan Film allows you to segment films—that is, to extract individual frames of cross-sectional films and display them as a “stack,” or as a jitter-free cine loop. Additionally, PACS Scan Film offers a special feature called Auto-Segmentation Technology (AST) that employs a number of unique algorithms to segment films automatically. To segment films, perform the procedure below. To adjust related settings, see 11.2 Film Digitizer Settings.

Procedure

1. Click Settings > Film Digitizer, then double-click a modality in the list to open the Edit Modality dialog box.
2. Select the Segment check box. Select the One film per series check box if you wish to send all non-segmented films as individual series. Click OK.

3. Digitize the films according to the procedure in section 3.1.

After the last film has been digitized, auto-segmentation begins and continues until all films have been segmented. The results are displayed in the main window. If automatic segmentation fails, the process stops and the manual segmentation editor appears.
Manual Segmentation

The manual segmentation editor starts automatically if digitizing is complete and auto-segmentation fails, or if you right-click the image in the main viewing area and click **Resegment**. Manually segment the film by performing the procedure below.

1. **Select a layout from the **Columns × Rows** list.**
   The values in the list are loaded from the layouts.xml file in the config folder.

2. **Adjust the layout overlay by dragging the red lines with the mouse.**
   The mouse pointer is context sensitive and will indicate in which direction the borders can be moved.

3. **Click **Segment** to perform segmentation using the borders of the layout overlay.**
   If needed, you can click **Save Orig** to save changes to the segmentation.

![Figure 3.2 Manual segmentation with layout overlay](image)
Viewing Segmented Films

After a film has been successfully segmented, the top image in the stack appears in the main viewing area, and a thumbnail representing the entire stack appears in the thumbnail list. You can scroll through the segments as follows.

1. Click **Stack** on the main viewing area.

2. Point to the image, and then drag up and down or rotate the mouse wheel to scroll through the stacked segments.

Splitting the Stack into Series

You can split a stack into multiple series. On the stack’s context menu, click **Split Series**. A separate series is created at the current point in the stack. You can split the stack as many times as there are images in the stack.

Reordering Series

If the films were digitized in the wrong order they can be reordered after segmentation is complete. On the thumbnail’s context menu, click **Reorder** (note: the Reorder command is only available if multiple films have been digitized). The Reordering Editor appears as shown in figure 3.3 below.

![Figure 3.3 Reordering editor](image)
The reordering editor has three components.

- **Left panel**
  The entire stack of slices.

- **Right panel**
  The currently selected film.

- **Bottom panel**
  A film strip of all films in the stack, listed in the order that makes up the current stack.

1. Drag films to their correct positions in the film strip. The stack will be updated to reflect the current order of the films.
2. Click **OK** to save the stack.

**Reordering the Thumbnail List**

The order of thumbnails in the list determines the order in which the films are sent. You can move a thumbnail up or down in the list by selecting it and clicking the arrow buttons at the bottom of the list.
3.3 Digital Mammography

PACS Scan Film for Mammography supports the DICOM standard for the digitizing of prior mammography films, and provides the required information that allows PACS to display mammography images optimally for radiologist workflow. To enable digital mammography, perform the procedure below. To adjust related settings, see the Mammography section in 11.2 Film Digitizer Settings.

Procedure

1. Click Settings > Film Digitizer.
   The Film Digitizer dialog box appears.

   ![Film Digitizer dialog box]

   Figure 3.4 Enabling DICOM DX mammography fields

3. Select the Enable Automatic Marker Detection (AMD) check box if needed to automatically identify image orientation based on the presence of an image marker.

   **CAUTION**
   When selected, confirm that the correct orientation label has been selected prior to sending. You can override the automatic selection by selecting a different orientation in the list in the figure below.

4. Select a view description using the list for each image to be digitized (see figure 3.5 below). When an image is assigned a view description, the description is displayed under the thumbnail on the right.
5 Adjust the following settings as needed.

- **Enable DCA**
  Select to apply the dynamic contrast algorithm. This function renders analog images with a digital "look and feel." Select **High**, **Medium**, or **Low** from the list.

- **Default M/G Window/Level**
  Enter a default window and level setting for the digitized mammography images.

- **Match scanned film to FFDM spot size**
  Select the appropriate FFDM spot size.

6 When all settings are selected, digitize the mammography film using the same steps as for plain film.
4 Video Images

To digitally capture dynamic (video) or static (snapshot) images, perform the procedures below. To adjust video related settings, see 11.5 Video Settings.

4.1 Capturing Dynamic Images (Video)

Preparation

The following equipment is required.

1. An imaging source (such as an endoscope, colonoscopy camera, and so on.)
2. A PC with PACS Scan Video or ScopeCap installed
3. Video cables
   Connect cables as needed from the video source to the PC.
   Optional: Connect a foot switch or capture switch.

Procedure

1. Click Capture.

   If the Capture button is not visible even though a video device is installed, click Settings > Buttons, then select the desired button from one of the available lists. If the Capture button is dimmed, exit Batch mode.

   ![Capture button](image)

   The first time you capture video for a patient, the Enter Patient Information dialog box appears (see 9.1 Entering Patient Information for more details).

2. Click Continue.

   The video preview window appears.
3 Under **Mode**, select **Video**.
   The preview window displays images from the video device. To minimize the image portion of the window, click the minimize button in the lower right corner of the window.

4 **Click Record** to start recording video.
   The Record button changes to a Stop button.

5 **When you finish a recording, click Stop**.
   Repeat the procedure to capture as many videos as needed. A thumbnail for each captured video appears in the right pane of the main screen.
Playing Back Video

1. To play back a video, clicking a thumbnail.
2. Use the transport buttons to control playback.
   You can drag the frame slider just above the buttons to move backwards and forwards through the frames.

Editing Video

You can right-click the video to display the video editing context menu. The context menu contains the following three commands.

- **Extract Frame**
  Creates a static image (snapshot) of the currently displayed frame and adds a thumbnail to the list

- **Trim Front**
  Cuts the video from the first frame to the current frame

- **Trim End**
  Cuts the video from the current frame to the last frame
4.2 Capturing Static Images (Snapshots)

Procedure

1. In the main window, click **Capture**.

2. Under **Mode**, select **Still** to enter Snapshot mode.
   As with the video preview window above, you can minimize the image portion of the snapshot preview window by clicking the minimize button in the lower right corner of the window.

3. Press the capture trigger or foot switch, or click **Snap** to capture an image.
   A thumbnail for the snapshot appears in the main screen. A new thumbnail is added each time you take a new snapshot.

4. Continue capturing key images throughout the medical procedure.
   When you are finished, close the snapshot preview window. If you want to delete a video or snapshot, select its thumbnail and press the Delete key on the keyboard, or right-click its thumbnail and click **Delete** in the context menu.

Settings Menu in the Video/Snapshot Preview Window

See 11.5 Video Settings and 11.6 Capture Device Settings for an explanation of this menu.

Viewing Snapshots

Click any thumbnail to view the corresponding snapshot in the main screen. If needed, choose a zoom level from the list at the bottom of the main viewing area.

- **50–200%**
  Zooms by selected zoom factor.
- **Fit Page**
  Zooms until either the vertical or horizontal edges of the snapshot reach the edges of the screen.
- **Fit Width**
  Zooms until the vertical edges of the snapshot reach the vertical edges of the screen.

Editing Snapshots

You can edit the image using the tools displayed in the vertical toolbar. For instructions on how to use each tool, see 8.1 Editing Images and Documents.
5 Existing Image Files

5.1 Importing Non-DICOM Images and Documents

PACS Scan can import the following file types:

- .jpg
- .tiff
- .mpg
- .avi
- .png
- .bmp
- .pdf

To import an image or document, perform the procedure below. To adjust related settings, see 11.10 Import Settings.

Procedure

1. Click File > Import, or click Import.
   
   If the Import button is not visible, click Settings > Buttons, then select the desired button from one of the available lists.

   ![Import button]

   The first time you import images or documents for a patient, the Enter Patient Information dialog box appears (see 9.1 Entering Patient Information for more details).

2. Enter the patient information, then click Continue to display a browse dialog box.

3. Select the folder containing the image or document to import and click OK.
   
   The thumbnail selection dialog box appears.

4. Select one or more images or documents to import.
   
   You can select all items in the folder by clicking Select All, or select items individually by selecting their check boxes. To clear your selections click Clear All. To look in a different folder, click Browse.
5 Click **OK** to import the selected images or documents. A thumbnail of each imported image or document appears in the right of the main screen. You can click a thumbnail to view the corresponding item. You can import additional items for the same patient by clicking Import again.
5.2 Importing DICOM Images (CD/DVD Import)

To import DICOM images (such as from CDs and DVDs), perform the procedure below. To adjust related settings, see 11.4 CD Import Settings.

Procedure

1. Click File > CD Import, or click CD Import.
   If the CD Import button is not visible, click Settings > Buttons, then select the desired button from one of the available lists.

   ![CD Import button]

   If multiple import sources/devices were specified in the CD Import Settings dialog box, the import source selection dialog box appears.

2. Select a source and click Continue.
   The Select Patient from CD dialog box appears.

3. Select patients to import from the list and click one of the following buttons.
   - **Send All**
     The selected studies are sent to PACS, and the import operation is completed.
   - **View**
     The Gear View Basic viewer program launches and displays images and reports for the selected patient.
   - **Edit**
     The Localize Patient information dialog box appears. Continue to step 4.
   - **Note**
     • You can select multiple patients by clicking on them while holding down the Ctrl key.
     • If Send and Edit mode was selected in the 11.4 CD Import Settings, the Send All button is not available.
     • If Batch mode was selected in the CD Import settings, the Edit button is not available. Click the Send All button to immediately send all patient data to PACS without continuing on to the Localize Patient information dialog box.
     • If Both mode was selected in the CD Import settings, you can either click Send All or Edit as needed.
4 If needed, enter new values in the **Updated Value** column. You can type information directly, or click **Lookup** to fill in values from existing studies (see the following section). To copy the information from the **Original Value** column, click **Copy**. To clear the **Updated Value** column and start over, click **Clear**.

5 Click **Import** to send the study to PACS (the selected DICOM destination).

**Lookup**

The Lookup feature requires that you have a DICOM Worklist provider or DICOM Query/Retrieve provider on your network, and that the provider is configured in PACS Scan’s **DICOM Settings** dialog box. If more than one provider is configured, select the desired provider in the **Worklist Source** list.

1 Enter one or more lookup criteria in the **Updated Value** column.

   In most fields, you must enter the lookup criterion exactly as it appears in the study. If a criterion does not match, the lookup fails. However for the fields marked “searchable” (with a yellow asterisk), you only need to enter one or more of the first characters. For example, to search for patients with last names starting with ‘A,’ type **A** in the **Last Name** field.

2 Click **Lookup** to perform the search.

   If one exact match is found, all updated value fields are filled in. If multiple matches are found, a search results selection dialog box appears.

3 Click the desired patient and click **OK**.

   The Updated Value column is filled in with information from the selected patient.

4 Click **Import** to send the study to the selected DICOM destination.

   The **Localize Patient Information** dialog box remains open until you click either **Cancel** or **Exit**.

**Importing Multiple Studies**

You can import multiple studies if needed. The status in the **Select Study to Import** table indicates whether the study is still being edited or has already been processed. You can select and edit each study in the list before clicking **Import**.
6 Virtual Printer

When you install PACS Scan, a virtual printer called “PacsSCAN” is automatically added to your list of available printers in Windows. When using any program that supports printing in Windows (such as any Microsoft Office program), you can print documents/images directly to PACS Scan, and then send those images to PACS. The following example shows how to print to PACS Scan using Windows Notepad. The actual screens and procedures will differ depending on the application used. To adjust related settings, see 11.11 Virtual Printer Settings.

Procedure

1. Open the document or image to print in your application.
2. Click File > Print to display a print dialog box. In the print dialog box, select “PacsSCAN” as your printer, and click OK.

If PACS Scan is not open, it starts automatically. The Enter Patient Information dialog box appears, but this time it includes a “Preview” button.

3. Edit the information in the dialog box as necessary, then click Send to send the image to PACS, or Preview to view the image in PACS Scan.
7 Image Exchange Services

For image exchange between facilities using Lexmark Enterprise Software products, use PACS Scan to receive (download) data that was uploaded to the image exchange service. Before you begin, make sure you have entered your account settings in PACS Scan (see 11.12 Image Exchange Settings). If PACS Scan is already displaying a patient, you cannot download a new study. The Inbox is updated in real time. PACS Scan cannot be used to upload studies to the server; use Media Writer for uploading.

Procedure

1. Click Exchange.
   
The Inbox screen appears. If the Exchange button is not visible, click Settings > Buttons, then select the desired button from one of the available lists.

2. Select a study and click Import.
   
   A dialog box appears that is essentially the same as the Localize Patient Information dialog box.

3. Follow the procedure starting with step 4 in 5.2 Importing DICOM Images (CD/DVD Import) to modify fields if necessary, then click Import.

Inbox Buttons

- **Import**
  
  Imports the selected study to PACS Scan. This button is not available if the study is being accessed by another user.

- **Delete**
  
  Deletes the selected study from the server.

- **View**
  
  Launches Gear View Basic with the selected study open. This button is not visible if the study is being accessed by another user.

- **Close**
  
  Closes the Inbox.

- **Admin**
  
  Launches a web browser and opens your Image Exchange account page. See separate documentation for details.
Image Exchange Status Messages

The following table shows the status messages of the image exchange function, and their meanings.

<table>
<thead>
<tr>
<th>Status</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uploading</td>
<td>Study is moving from the sender's client to a temporary location on the server.</td>
</tr>
<tr>
<td>Upload_Error</td>
<td>An error occurred, and the upload was aborted.</td>
</tr>
<tr>
<td>Upload Complete</td>
<td>Study is finished uploading.</td>
</tr>
<tr>
<td>Downloading</td>
<td>Study is moving from the server to the recipient's Inbox.</td>
</tr>
<tr>
<td>Download_Error</td>
<td>An error occurred, and the download was aborted.</td>
</tr>
<tr>
<td>Download Complete</td>
<td>Study is finished downloading, and is available using PACS Scan.</td>
</tr>
<tr>
<td>Download Deleted</td>
<td>Study has been deleted from the server, but is still available in the Inbox.</td>
</tr>
<tr>
<td>Processed</td>
<td>Study has been imported by PACS Scan.</td>
</tr>
<tr>
<td>Processed_Deleted</td>
<td>Study was deleted after being imported.</td>
</tr>
<tr>
<td>Expired_Deleted</td>
<td>Study expired before being processed, and was deleted.</td>
</tr>
</tbody>
</table>
# 8 Editing and Sending Images and Documents

## 8.1 Editing Images and Documents

PACS Scan provides the following tools to edit an image, document, or electronic form before sending it to a PACS or other storage device. The editing tools available depend on the type of image or document you are editing.

<table>
<thead>
<tr>
<th>Tool</th>
<th>Name</th>
<th>Usage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Arrow" /></td>
<td>Arrow</td>
<td>Form viewer Snapshots</td>
<td>Draws an arrow. Drag anywhere on the form, from the arrow’s start point to its endpoint. You can reposition and resize arrows by dragging them or their handles. Right-click arrows to display a context menu for selecting their width and color.</td>
</tr>
<tr>
<td><img src="image2" alt="Crop" /></td>
<td>Crop</td>
<td>Film Paper Snapshots</td>
<td>Crops the image. Click Crop to enter Crop mode. Drag a crop area on the image. After selection, the Crop button changes to the Scissors button. Click Scissors to crop the image.</td>
</tr>
<tr>
<td><img src="image3" alt="Delete" /></td>
<td>Delete</td>
<td>All</td>
<td>Removes the current image/page from the thumbnail list.</td>
</tr>
<tr>
<td><img src="image4" alt="Draw" /></td>
<td>Draw</td>
<td>Form viewer Snapshots</td>
<td>Draws a freehand line. Drag or use a stylus to draw anywhere on the image/document. When using this tool, line width and color selection buttons become available at the bottom of the screen. The default width and color are medium and black.</td>
</tr>
<tr>
<td><img src="image5" alt="Ellipse" /></td>
<td>Ellipse tool</td>
<td>Form viewer</td>
<td>Draws an Ellipse. Click to place an ellipse on the form (initially, the ellipse is a perfect circle). To move the ellipse, drag any point along its circumference. Ellipses do not have handles, but you can transform and resize them by dragging the corners and middles of their colored bounding boxes. To remove an ellipse from the form, right-click it and click Delete Object.</td>
</tr>
<tr>
<td><img src="image6" alt="Eraser" /></td>
<td>Eraser</td>
<td>Form viewer Snapshots</td>
<td>Turns off drawing. Drag over previously drawn lines to erase them.</td>
</tr>
<tr>
<td><img src="image7" alt="Flip Lift/Right" /></td>
<td>Flip Lift/Right</td>
<td>Film Paper</td>
<td>Flips the image horizontally.</td>
</tr>
<tr>
<td>Tool</td>
<td>Name</td>
<td>Usage</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>![Image]</td>
<td>Flip Top/Bottom</td>
<td>Film Paper</td>
<td>Flips the image vertically.</td>
</tr>
<tr>
<td>![Image]</td>
<td>Image tool</td>
<td>Form viewer</td>
<td>Places graphic images on an image or document. Click the tool to display the image list, then select an image and click anywhere on the form to place it. To manipulate a placed image, click to display its eight handles. Resize by dragging any of the four green corner handles. Rotate by dragging any of the blue square handles. Right-click to mirror or delete the image.</td>
</tr>
<tr>
<td>![Image]</td>
<td>Invert</td>
<td>Film Paper</td>
<td>Swaps black and white values in grayscale paper or film images.</td>
</tr>
<tr>
<td>![Image]</td>
<td>Open/Close</td>
<td>All</td>
<td>Opens/closes the left panel. Click ‘&lt;&lt;’ to close, or ‘&gt;&gt;’ to show the left panel. This feature is useful on vertical displays. Loading a new form automatically closes the left panel.</td>
</tr>
<tr>
<td>![Image]</td>
<td>Print</td>
<td>Form viewer</td>
<td>Prints the image/document to the selected printer.</td>
</tr>
<tr>
<td>![Image]</td>
<td>Reset</td>
<td>All</td>
<td>Returns the image/document to its original size and orientation, and undoes all rotate and crop operations.</td>
</tr>
<tr>
<td>![Image]</td>
<td>Rotate Left</td>
<td>Film Paper</td>
<td>Rotates the entire document counter-clockwise 90 degrees.</td>
</tr>
<tr>
<td>![Image]</td>
<td>Rotate Right</td>
<td>Film Paper</td>
<td>Rotates the entire document clockwise 90 degrees.</td>
</tr>
<tr>
<td>![Image]</td>
<td>Selection tool</td>
<td>Form viewer</td>
<td>Selects or manipulates objects and controls. Turns off drawing.</td>
</tr>
<tr>
<td>![Image]</td>
<td>Stack</td>
<td>Film stack</td>
<td>Scrolls through the images in a multi-image series or stack. Click <strong>Stack</strong>, then drag up and down on the stack to move through the images.</td>
</tr>
</tbody>
</table>
### Sticky Note Form viewer Snapshots

Places a “sticky note” on the form. Click inside the sticky note with the selection tool to type text or edit existing text. To resize the note, point to the note to display its handles, then drag any of the handles. You can also right-click a note to display a context menu that allows you to move, edit, or delete it, change its font size, font color, or background color, or specify to “burn the background” (keep the background color of the note on the actual form).

### Window/Level Film

Changes the brightness and contrast of the image. Click Window/Level, then drag the pointer up and down over the image to change the level values. Drag left and right to change the window values.

### Other Buttons

#### Edit Patient Information

Click the Edit button to edit patient information after scanning, then click Continue to accept your edits.

#### Close Patient

Click X to close the current patient and delete all of the scanned images.
8.2 Sending Images

All acquired images can be sent to a PACS archive or other storage device. Before you send images, make sure you have configured destination devices in the DICOM settings.

Procedure

1. Acquire and edit all documents, films, forms, and/or images for a patient.
   
   If multiple DICOM destinations have been configured, select a destination from the list located just below the Send button.

2. Click Send.

   The DICOM sending process starts, and you can start acquiring images for the next patient if needed. After you click Send, an entry appears in the send queue (main screen, left pane) that contains the patient’s name and send status. The status of each entry will be one of the following:

   - **Sending**
     Documents currently being sent
   - **Pending**
     Job queued and will be sent shortly
   - **Success**
     Documents sent successfully
   - **Error**
     Documents could not be sent because of a communication failure

Clearing the Send Queue

To clear all of the entries from the send queue, click Clear. Note that after a failed job has been cleared, it can no longer be restarted.

Restarting Failed Jobs

Click Restart on the send queue to restart all failed jobs. Note that all failed jobs will also be restarted when you restart PACS Scan.

- **Note**
  When exiting PACS Scan, the send queue will be stopped and all jobs in the queue will be saved. Queued jobs will be automatically re-sent the next time you start PACS Scan.
9 Patient Information and Electronic Forms

9.1 Entering Patient Information

The Enter Patient Information dialog box lets you enter information you wish to have attached to a scanned document, digitized film, electronic form, or captured image.

Procedure

1. Acquire the first image for a patient (for example, by clicking Scan). If a patient is already "open" in the main screen, click Edit in the upper right hand corner of the program window. The Enter Patient Information dialog box opens.

2. Enter the patient information you wish to attach to the document or image.
   Most fields are self-explanatory, but note the following.

   - **Worklist Source**
     This list is only available if multiple lookup devices were set up in the DICOM Settings. Choose the device to be queried when performing a lookup. Only one device can be queried at a time.

   - **Study Date**
     In this box, click to select the month, date, or year. Use the UP and DOWN arrow keys on the keyboard to increment or decrement the selected item, and the RIGHT and LEFT keys to move between items. You can also click the list box arrow to display a calendar for entering the date. You can click the month in the calendar's title to display a context menu of months. Clicking the year reveals a selection box for entering a year.

   - **Study Time**
     Click to select the hour, minutes, or period (AM/PM), then use the keyboard number pad, arrow keys, or on-screen arrow buttons to change the values.

   - **Description**
     Type arbitrary text in the box, or select a description from the list if descriptions were added in the Defaults dialog box.

   - **[Label 1] and [Label 2]**
     Type arbitrary text in the boxes. The boxes are only available if they were added in the Defaults dialog box. The label of the boxes matches what you entered in the Defaults dialog box.

Patient Lookup

You can enter patient information manually, or you can copy existing patient information by using the Lookup feature.

1. If the Lookup button is unavailable, click Settings > DICOM, then select the Enable Patient Lookup check box.
Enter all or part of a field in the **Enter Patient Information** dialog box. This will be used as a search criterion.

You do not have to enter an exact match for a particular field. For example, if you enter "W" in the last name box, PACS Scan finds all patients whose last names begin with "W."

3. Click **Lookup** or press **Enter**.

   If one exact match is found, PACS Scan fills in all of the available fields automatically. If more than one patient record is found, the **Select Patient dialog box** is displayed.

4. Select the correct patient and click **OK**.

5. In the **Enter Patient Information** dialog box, click **Continue**. Or, click **Clear** to start over.

   **Note**
   - The date format used in the dialog box depends on the Windows regional settings on your PC.
   - After you have copied a study using the Lookup feature, only the Description and Modality fields are available for editing.

**Barcodes**

PACS Scan accepts barcode reader input. You can configure PACS Scan to automatically perform a lookup when a barcode is read. For more information on enabling automatic lookups, see [11.16 Fields](#).

**Last Patient**

The Last Patient feature streamlines workflow for patients with multiple studies. Click **Last Patient** to fill the **Enter Patient Information** dialog box in with the information from the previous patient.
9.2 Filling In Electronic Forms

You can add additional information to a study by filing in an electronic form (or simply, “a form”). PACS Scan comes with an “Electronic Form Viewer” that allows you to load a form, fill it in with patient/study information, and send it to PACS. To create and edit forms, see 11.3 Form Settings. To fill in a form, load it into the Electronic Form Viewer according to the following procedure.

**Procedure**

1. Click **File > Load Form**, or click **Form**.
   If the Form button is not visible, click **Settings > Buttons**, then select the desired button from one of the available lists.

2. Click **Continue**.
   A list of forms appears. The source folder for the forms is specified in the **Form Settings** dialog box.

3. Select the desired form and then click **OK**. The form appears in the screen.
   PACS Scan uses the previously entered patient/study information to fill in any corresponding fields that may have been included on the form. You can click **Form** again to import additional forms for the same patient. If needed, you can modify the form using the tools in the vertical tool bar (see Editing Images and Documents for instructions on how to use the tools). If a form has multiple pages, you can use the page selection buttons to scroll through the pages. Click the outer arrows to skip to either the first or last page, or click the inner arrows to move to the next or previous page. You can also press the Page Up or Page Down key on the keyboard.

4. If included on the form, you can use the following objects to enter information.
   - **Text Boxes**
     You can type or edit text in a text box on a form before sending it. Text boxes support the standard Windows keyboard shortcuts for Cut (Ctrl-X), Copy (Ctrl-C), and Paste (Ctrl-V).
   - **Check Boxes**
     You can select or clear check boxes on a form before sending it. If the check box is active but not selected, you can select it by pressing the space bar.
• Lists
  You can select an item from a list on a form before sending it.

• Numeric (Spin) Boxes
  You can type or select a number in a spin box on a form before sending it.

5 Click **Send**.

If a form contains a required field, then you must enter data in that field before sending the form to PACS. If a required field has not been filled in, an error message appears with the name of that field.

### 9.3 Using Dictation Systems with Forms

If the ModLink Forms option is licensed in PACS Scan, you can share information between ModLink Forms and your dictation system. Text boxes and other form fields can be either auto-filled by the dictation system for checking and editing, or entered into the form and sent to the dictation system. You must select the location where ModLink will retrieve and send its values when configuring ModLink Forms. For details on how to configure forms for dictation systems, see 11.3 Form Settings.
10 XDS Repositories

If licensed for XDS, PACS Scan can send scanned documents, virtually printed images, imported JPEGs, and MPEG files to an XDS repository. CD-imported images and digitized film are not supported at this time. Before beginning, you must enter an XDS source in the DICOM settings, then enter XDS-specific settings according to section 11.9 XDS Settings

Procedure

1. In the main screen, select an XDS destination.

![Figure 10.1 Select an XDS destination](image)

Note: If a patient is already open and a DICOM destination is selected, you must finish sending or close the patient before selecting an XDS destination.

2. Start acquiring an image by clicking **Scan** or **Import**, or by virtually printing to PACS Scan.
   A modified version of the **Enter Patient Information** dialog box appears with any XDS fields that were enabled. Note that the accession number and body part fields are unavailable when sending to an XDS destination.

3. Enter patient information and XDS fields as necessary, and then click **Continue**.
   If enabled, you can use the Lookup button to search a PDQ server for patient information. Note that this is a separate server from any DICOM lookup sources you may have also configured. When performing a PDQ query, the following fields accept wildcards: **MRN, Patient Last/First Name, DOB, and Sex**.

4. When all images have been acquired, click **Send**.
   Images are sent to the XDS repository.
11 Settings

11.1 Paper Scanner Settings

The items below can be configured from the **Paper Scanner Settings** dialog box. To open the dialog box, click **Settings > Paper Scanner**.

**Scan Settings**

- **Enable Auto Feeder**
  Select to scan multiple documents from a sheet feeder. If your scanner does not support a sheet feeder, clear this check box.

- **Enable Auto Invert**
  Select to invert black and white channels of scanned paper documents. Black text on white background will appear as white text on black background, and vice versa.

- **Enable Dual Sided Scanning**
  Select to scan the front and back sides of a single document at the same time. If your scanner does not support dual sided scanning, clear this check box.
  Note: If you select Enable Dual Sided Scanning, you must also select Enable Auto Feeder.

- **Resolution**
  Enter the horizontal and vertical resolution in dots per inch.

- **Height**
  Enter the maximum height of the paper to be scanned.

- **Enable Blank Page Removal**
  Select to allow removal of scanned blank pages.

- **Sensitivity**
  Move the slider toward High to increase the rejection of pages with lighter text.

**Color Mode**

Select grayscale or color image scanning.

**Grayscale Settings**

- **Window/Level**
  Enter the window and level values (only if Grayscale is selected).
Scan Settings

- **Enable Scanner User Interface**
  Some scanners provide an advanced user interface that gives you finer control over the scanner’s parameters. Select this check box to open the scanner’s advanced user interface each time you click Scan. This feature adds extra steps to the scanning process and is intended only for advanced users. Selecting this feature is recommended when connecting to a digital camera.

- **TWAIN Source**
  Click Change to change the scanner used by PACS Scan.

  Note: Changing your computer’s default scanner in other applications may also change the default scanner used by PACS Scan.

JPEG Export

- **Enable JPEG Export**
  Select to allow EMR, RIS, and other systems to receive and process scanned documents. This feature copies each scanned document or electronic form to the specified directory as a JPEG file, and creates an index file that contains information about the patient, study, and related JPEG files that were exported.

- **Settings**
  Click to specify the JPEG export directory, file name formats, and index file contents. See the JPEG Export Settings dialog box below.

Batch Settings

If your paper documents have barcodes, you can use batch scanning to automatically look up patient information by accession number and send the documents directly to PACS. See also Batch Scanning.

- **Validate Bar Code Length**
  Select to search for a barcode of a specified length. This feature can be used to select the correct barcode when there is more than one barcode per page.

- **Length**
  Specify the length of the desired barcode.
JPEG Export Settings Dialog Box

If you export images as JPEG files, enter the settings described below. Note that you can use the file name fields described on the next page for automatic file naming.

- **Export Folder**
  The save destination for JPEG files.

- **Image File Name**
  The file name format for exported JPEG files.

- **Index File Name**
  The file name format for the index file (.xml) sent with the exported JPEG files. Index files contain information that allows use of the image by non-DICOM applications.

- **Index Template File**
  The location of the index template files.
**File Name Fields**

File name fields let you automatically create unique image and index file names for each JPEG export operation. When you export a file, PACS Scan substitutes the fields with the corresponding text from the patient/study. The following fields are available.

- `<%patientid%>` Patient ID
- `<%accession%>` Accession number
- `<%lastname%>` Patient’s last name
- `<%firstname%>` Patient’s first name
- `<%middlename%>` Patient’s middle name
- `<%sex%>` Patient’s sex
- `<%studyuid%>` DICOM study UID
- `<%studydate%>` Study date (yyyymmdd).
  
  The date format may vary depending on the regional settings of Windows.
- `<%studytime%>` Study time (hhmmss)
- `<%studydescription%>` Study description
- `<%studyid%>` Study ID
- `<%bodypart%>` Body part
- `<%modality%>` Modality
- `<%msstamp%>` Time stamp (milliseconds)
- `<%imgno%>` Image number

When creating the index file, you can repeat portions of the template file if there is more than one image. The following file name fields cause the template to be repeated. Note that these strings are removed from the output file:

- `<%begin_image%>` Starts the repeating section for images
- `<%end_image%>` Ends the repeating section for images

A sample template file is stored in the PACS Scan application folder as `...\templates\sample_jpg_header.xml`. 
11.2 Film Digitizer Settings

1. Click **Settings > Film Digitizer** to open the **Film Digitizer** dialog box.
2. Enter the settings described below and click **OK**.

**Modality Settings**

To edit the settings for each modality, select a modality and then click **Edit** (or simply double-click the modality). The **Edit Modality** dialog box appears. You can configure the following items in the **Edit Modality** dialog box.

- **One film per series**
  - Select to send each digitized film as an individual series.

- **Segment**
  - Select to enable Auto-segmentation Technology (AST) to create image stacks from cross-sectional film (see also 3.2 Segmenting Films).

- **Bits Per Pixel**
  - Select the number of gray levels per pixel. 12-bit pixels provide 4096 gray levels, and 8-bit pixels provide 256 gray levels. Use 12 bits for most applications.

- **Resolution**
  - Select the horizontal and vertical resolution in dots per inch.

- **Maximum Height (Inches)**
  - Enter the maximum height of the film in inches. You can scan long bone studies by increasing this value.

- **Enable Description List**
  - Select to assign predefined series descriptions to each image. Click **Edit List** to modify these descriptions.

**Mammography**

- **Enable DX Mammography Fields**
  - Select to send mammography images to PACS using the DICOM Digital Mammography standard. When selected, you must select an orientation label for each digitized mammography image. The orientation label is used to enable mammography hanging protocols.

- **Enable Mammography Marker Detection**
  - Select to automatically identify image orientation based on the presence of an image marker.

  **CAUTION**
  - When you select the **Enable Mammography Marker Detection** check box, confirm that the correct orientation label has been selected prior to sending. You can override the automatic selection by clicking the pull-down menu and selecting a different orientation.
● **Enable DCA**
  The dynamic contrast algorithm (DCA) is a proprietary image processing algorithm that can be used to enhance digitized film images, resulting in a “digital look and feel” for easier comparison with true digital images. The algorithm has three levels of enhancement: Low, Medium, and High. When selected, the level of DCA enhancement is applied to all mammography images and does not change when a new user logs on.

  If you would like to use the dynamic contrast algorithm function, select the *Enable DCA* check box and then select *High*, *Medium*, or *Low* from the list.

● **Default MG Window/Level**
  You can enter default window and level settings for digitized mammography images. If none are specified, the default window/level settings for all images are used (see Default Window/Level below).

● **Match scanned film to FFDM spot size**
  While some mammography workstations automatically resize digitized mammography images when displayed, some PACS workstations do not. To compensate, users can enable the “Match digitized film spot size to FFDM spot size” feature. When a spot size is selected, PACS Scan automatically resizes digitized mammography images before they are sent to PACS, making digitized mammograms and FFDM images approximately the same size. *Spot size* refers to the resolution of each pixel, measured in microns (µm). The FFDM spot size is determined by the image detector and varies by vendor.

  ● **Typical spot sizes**
    
    50 µm  Fuji FCRm
    70 µm  Hologic Selenia, Siemens MAMMOMAT
    100 µm  GE Senographe

  Note: This list is not comprehensive. Verify the spot size in your FFDM documentation before using this feature.

  **WARNING**: Digitized mammography film is not labeled for primary diagnostic use.

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**Scanner Settings**

● **Enable Auto Feeder**
  Select to digitize multiple films from a sheet feeder (if supported).

● **Load Film Right Side Up**
  Select to load the film into the feeder as if you were looking at it on a light box.

● **Load Film Upside Down**
  Select to load the film top-first into the feeder.

● **Unload**
  Click to force the digitizer to unload a film.

● **Test Scanner**
  Click to test the connectivity from PACS Scan to the digitizer.
Batch Settings

- **Enable Batch Scanning**
  Select to enable batch digitizing of films.

Copy Settings

- **Bits Per Pixel**
  Select the number of gray levels per pixel. 12-bit pixels provide 4096 gray levels, and 8-bit pixels provide 256 gray levels. Use 12 bits for most applications.

- **Scan Resolution (DPI)**
  Select the horizontal and vertical digitizing resolution in dots per inch.

- **Maximum Height (Inches)**
  Enter the maximum image height for the digitizer. You can copy long bone studies by increasing this value.

Calibration

This screen offers three modes of digitizer calibration. See the digitizer manufacturer’s documentation for more information.

Measurements

- **Send measurements to PACS**
  Indicates whether image height and width are sent to PACS.

  Note: Image measurements are approximations only.

Default Window/Level

- **Window/Level**
  These are the default window and level settings to be used for all non-mammogram images. If no settings are entered here, PACS Scan defaults to Window = 2495; Level = 2800.
11.3 Form Settings

Electronic forms (or simply, “forms”) are documents used to attach information to a study. This section describes creating (“adding”) new forms and editing existing forms. For information on viewing, filling in, and sending forms, see 9.2 Filling In Electronic Forms. Forms consist of a background image onto which you can add controls such as text boxes, buttons, menus, lists, input boxes, and other tools for inputting new information.

Adding and Editing Forms

To begin adding or editing forms, click Settings > Form Settings. The Form Settings dialog box appears. The following settings are available in the Form Settings dialog box.

- **Forms Location**
  The parent folder where forms, and/or subfolders containing forms, are saved.

- **Image Folder**
  The folder containing images that can be placed on forms using the Picture tool. This box is synchronized to the Image Folder box in the 11.10 Import Settings dialog box.

- **Auto Invert**
  Inverts the black and white channels of the form (black text on white background appears as white text on black background, and vice versa).

- **Convert to Grayscale**
  Converts a form from color to grayscale.

- **Add**
  Opens the Form Editor (see figure 11.2).

- **Edit**
  Opens the Form Editor along with the form currently selected.

- **Remove**
  Permanently deletes the selected form.

- **Refresh**
  Reloads the list of forms located in the current folder.

- **Default Note Text Size**
  Sets the default font size for sticky notes.

- **Enable JPEG Export**
  Select to allow EMR, RIS, and other systems to receive and process electronic forms. This feature copies each electronic form to the specified directory as a JPEG file, and creates an index file that contains information about the patient, study, and related JPEG files that were exported. For details, see JPEG Export under Paper Scanner Settings.

- **Dictation**
  This group of settings is available if PACS Scan is licensed for use with ModLink Forms.
● **System**
Select the system from which to query, or to which to send form values, then enter the information in the fields described below. The fields that are available differ depending on which system you select.

● **User Name and Password**
Enter the user name and password for the dictation system.

● **URL**
Enter the URL of the dictation system.

● **Dictionary**
Enter the web address of the Modlink API. The default web address is http://XXX.XXX.XXX.XXX/MODLINKAPI/ModlinkWebService.aspx. The custom fields from ModLink are available in a list in the NAME field of the properties.

**Form Editor**
The form editor menu bar contains the following menus and commands. Many commands can also be accessed by the buttons on the tool bar (see Toolbar below).

- Save Form
- Import Background Image
- Scan Background Image
- Edit mode
- View Mode
- Cut Control
- Copy Control
- Paste Control
- Rotate Background
- Eraser
- Selection Tool
- Control Menu

**File**

- **Save**
  Saves the current form, and prompts you before overwriting an existing form.

- **Scan**
  Scans background images from the currently configured TWAIN source to be used as the background image of the form.
● Import
Selects a TIFF or JPEG image file as a background image for the form. If the image contains multiple pages, each image will appear as a separate page in the form.

● Replace Background
Selects a new TIFF or JPEG file to replace the current background image of the form.

● Exit
Closes the Form Editor.

Tools
You can select the following tools from the Tools menu.

● Control
Changes between creation or selection of controls depending on the current item in the control list.

● Eraser
Selects the eraser tool to erase parts of the background image.

● Rotate
Selects the rotation tool to rotate the background image.

● Align
  ● Lefts
  Aligns the left edges of selected controls.
  
  ● Rights
  Aligns the right edges of selected controls.
  
  ● Centers
  Aligns the horizontal centers of selected controls.
  
  ● Tops
  Aligns the top edges of selected controls.
  
  ● Middles
  Aligns the vertical middles of selected controls.
  
  ● Bottoms
  Aligns the bottom edges of selected controls.

● Make Same Size
  ● Width
  Makes the widths of selected controls equal.
  
  ● Height
  Makes the heights of selected controls equal.
  
  ● Both
  Makes both the widths and heights of selected controls equal.

● Set Tabs
Automatically sets the tab order for text boxes and check boxes on the current page to: “from the upper left to the lower right of the screen.”
● **Delete Page**
  Deletes the current page and its controls from the form.

● **Rotate Page**
  - **Rotate 90 Degrees**
    Rotates the background image clockwise 90 degrees.
  - **Rotate 180 Degrees**
    Rotates the background image clockwise 180 degrees.
  - **Rotate 270 Degrees**
    Rotates the background image clockwise 270 degrees.

### Toolbar

Many of the Tools menu options have shortcut buttons on the toolbar.

- **Save Form**
  Shortcut for File > Save.

- **Import Background Image**
  Shortcut for File > Import.

- **Scan Background Image**
  Shortcut for File > Scan.

- **Edit Mode**
  Changes to Edit mode for creating or manipulating controls on the form.

- **View Mode**
  Changes to View mode for previewing how your form will appear in the viewer.

- **Cut Control**
  Cuts currently selected controls and places them on the clipboard.

- **Copy Control**
  Copies the currently selected controls to the clipboard.

- **Paste Control**
  Pastes any controls on the clipboard onto the current page of the form.

- **Rotate Background**
  For 90 degree rotations, click **Tools > Rotate**.

- **Eraser**
  Use to erase portions of the background image and remove unneeded lines or blemishes that occurred during scanning. To undo an erasing operation, right-click the background image and click **Clear**.

### Control Menu

Use the Control menu to select a tool for the Control button. Once a tool is selected, you can drag an outline on the form to create a control, or use the selection tool to move or resize the control by dragging the control itself, its boundary box, or its handles. The tools available are as follows:
Selecting Controls

Click **Selection** on the Control menu, and then click to select the desired control. To select multiple controls, hold down the **Ctrl** key while selecting, or drag a lasso around the controls.

Control Properties

You can view and edit properties of any control by selecting **Properties** in its context menu. You can also select multiple controls and edit them as a group, but the options available depend on how many controls you have selected and their respective types. If multiple controls have different values for the same property (such as two controls having a different background color), the corresponding field in the dialog box will be dimmed. Once the property value is changed, the new value will be applied to all controls and updated in the property sheet.

General Properties

The General tab contains the following items.

- **Name**
  Type a name for the control. This name is displayed when the control is placed on the form, and used by the program when displaying error messages related to the control.

- **Text**
  - **Name**
    The font for text associated with the control.
  - **Color**
    The color for text associated with the control.
  - **Size**
    The size for text associated with the control.
  - **Send to Dictation System**
    This option is only available if PACS Scan is licensed for use with a dictation system. When you select this check box, the Name box becomes a list containing the field names from the dictionary file specified in the **Form Settings** dialog box.
When entering or selecting information in the text box or list on the PACS Scan electronic form, that information will be matched to the field selected here and sent to the dictation system.

- **Retrieve from Dictation System**
  This option is only available if PACS Scan is licensed for use with a dictation system. When you select this check box, the text box on the form will be filled in with information from the dictation system. This option is not available for lists.

- **Background**
  - **Save to Final Image**
    Select to include the background color in the final image when the form is sent to PACS. Clear to exclude the background color when sending to PACS.
  - **Color**
    The color of the background for the control (not for the overall form). Useful for highlighting the boundaries of a text box, for example.
  - **Transparency [slider]**
    Adjusts the transparency of the background color of the control. When transparent, items on the form’s background are visible through the control.

- **Other**
  - **Tab Order**
    The tab order of the control. You can set the tab order for all controls automatically by clicking **Tools > Set Tabs**.
  - **Hide On Tablet PC**
    Select to hide the control when viewing on a tablet PC.

### Options Properties

The information displayed on the Options tab depends on the currently selected control, and can include the following.

- **Sorted**
  Select the Sorted check box to sort the list alphabetically. If cleared, the values are displayed in the order that they appear on the list. Click the arrow buttons to rearrange the order of the list.

- **Required**
  Select to indicate a required field.

- **Value**
  Shows the items that the list will contain. To add a new item to the list, enter an item in the Add box and click Add.

- **Default**
  Select a list item and click the button to designate it as the default item.

- **Remove**
  Removes the currently selected item from the Item list.
Text Box Options

- **Multiline**
  Select to allow carriage returns and enable word wrapping in the text box.

- **Required**
  Select to indicate a required field.

- **Border**
  Select to display a border around the text box.

- **Max Characters**
  Enter the maximum number of characters that can be entered into the text box.

- **Default Value**
  The contents of this field will be automatically entered into the text box when the form is loaded, unless the field is filled in by the Auto Fill function (see “Auto Fill Properties” below).

Check Box Options

Check boxes have no user-changeable options.

Auto Fill Properties

The Auto Fill function fills in text boxes on the form automatically using information from the Enter Patient Information dialog box. Select the type of information to fill into the text box.

Control Position Properties

The Position tab shows the size and location of the current control. Change these values for more precise sizing and placement of the control.

Numeric Control Options

The numeric control creates a spin box for entering numbers. In the Options tab, set the range of numbers in the Min and Max box, the initially displayed value in the Default box, and by what amount numbers increase or decrease in the Step box.

Keyboard Commands

- **Delete**
  Deletes any selected controls from the form

- **Ctrl-X (cut)**
  Cuts any selected controls and places them on the clipboard

- **Ctrl-C (copy)**
  Copies any selected controls to the clipboard

- **Ctrl-V (paste)**
  Pastes the controls from the clipboard onto the current page of the form

- **Page Up/Down**
  Moves to the previous/next page
11.4 CD Import Settings

Configure CD import settings before importing studies from a DICOM CD.

Procedure

1. To configure CD Import, click Settings > CD Import. The CD Import Settings dialog box appears.
2. Enter the settings described below and click OK.

Import Source

To add a CD import source folder, click New, then enter a name for the data source. Next, browse for and enter a drive/folder where the images are located and click OK. You can add as many folders as needed.

CD Import Mode

Select a CD import mode of Edit and Send Mode, Batch Mode, or Both.

- **Edit and Send**
  Best for importing individual studies. In this mode, the user is prompted to update patient information before sending to PACS.

- **Batch**
  Fastest mode for importing multiple studies when patient information does not need to be updated (updating not allowed in this mode).

- **Both**
  In this mode, you can choose to send all studies or to edit them.

Field Settings

You can enter and edit various field settings to control how patient information is handled in the Localize Patient Information dialog box.

- **Field**
  These are the patient information fields that appear in the Localize Patient Information dialog box. You can add up to three additional fields by selecting them from the lists (located below the Sex field). To modify the options in the list, click the Advanced button.

- **Fill From**
  Select Worklist to automatically fill in the field from a DICOM worklist. Select Use Original to automatically copy the original value. Select Use Default to automatically fill in the field with the value you enter in the Default Value box.

- **Default Value**
  If Use Default is selected in the Fill From list, you can enter a default value here. This value will be automatically copied to the Updated Value field.
Edit and Send Import Options

- **Save Original DICOM Fields**
  Select to save all original DICOM fields along with the updated patient information. If selected, all original data will be saved to the DICOM Original Attributes tag.

- **Study UID**
  Select to create new study UIDs, use the originals, or use ones from a worklist.

**Do not import structured reports**
Select to prevent importing of structured reports.

**Do not import presentation states**
Select to prevent importing of image presentation states.

**Launch PacsSCAN when DICOM media is inserted**
Select to start PACS Scan automatically whenever a DICOM CD or other media is inserted into the PC.

**Use AE Title**
Select to force the imported media to use the AE title entered in the box to the right.

**Patient ID Prefix**
Select the check box, then enter a prefix to be added to all imported patient ID’s. This can be useful for preventing duplication errors in case an identical patient ID already exists in your PACS.

**Accession Prefix**
Same as the patient ID prefix, except that the prefix is added to the accession number.
11.5 Video Settings

The Video Settings dialog box enables you to select a capture device, and enter capture-related settings. To enter settings specific to the capture device itself, see Capture Device Settings below.

Procedure

1 Click Settings > Video Settings. The Video Settings dialog box appears. This dialog box will also be displayed if you attempt to capture an image when no capture device has been configured.

2 Enter the settings described below as needed, then click OK.

Capture Options

- **Device**
  Select a capture device.

- **Audio Device**
  Select an audio device if separate from the video device.

- **Mute Audio Preview**
  Select this check box to mute the audio preview.

Format

Select the video format that is most appropriate for your device and application. If you select MPEG-2, you can click the Video settings button for detailed settings.

- **Standard**
  The standard, non-compressed format providing the highest quality but also the largest file sizes.

- **MPEG-2**
  Lossy audio/video compression with superior quality to MPEG-4 but larger file sizes.

- **MPEG-4**
  Lossy audio/video compression with the lowest quality but smallest file size.

- **Allow Video Capture**
  You can disable video capturing of clips by clearing this check box. Still image capture will still be available.

- **Enable Audio Indicators**
  Select to enable audio indicators when an image is captured.

- **Enable Trigger Switch**
  Select to enable an external trigger switch or foot pedal, then select the type of switch (Toggle or Momentary).

- **Test Switch**
  To test the trigger switch, press the trigger button and confirm that the box turns green.
Video Settings

- **Maximum Video Length**
  Enter a number of seconds (up to 9999). Video capturing will stop automatically after the number of seconds typed.

11.6 Capture Device Settings

You can enter or modify specific settings for the capture device selected in Video Settings.

**Procedure**

1. Click **Capture**.
   
   The capture window appears. If the Capture button is not visible, click **Settings > Buttons**, then click the desired button in one of the available lists.

2. In the capture window, click **Settings**.
   
   Note that this is the Settings menu within the capture window, not the one within the main screen.

**Menu Commands**

The following are all of the commands possible in the Settings menu. Some of the commands may not be included depending on the capture device used.

- **Options**
  Select to display the settings dialog box described in 11.5 Video Settings.

- **Video Source**
  Select to configure properties such as deinterlacing and format (NTSC, PAL, etc.). If a video crossbar dialog box is not available, settings for the source input jack may appear here as well.

- **Video Device**
  Select to view status information and to edit settings for the capture device.

- **Video/Device Format**
  Select to edit settings for the format of the captured image, such as bit depth and compression. The output should always be 24-bit uncompressed RGB.

- **Video Pin**
  Similar to the Video Format dialog box: select to configure capture settings. This command is typically available if the capture device supports an independent video preview. Devices that combine video preview and the capture stream will most likely provide only the format dialog.

- **Video Crossbar**
  Select to specify the input jack for the capture device (S-Video, composite, etc).
11.7 Gamma Correction

Gamma Correction is used to optimize the image display on the PACS Scan monitor. LCD monitors will require a different value than CRT monitors.

1. Click **Settings > Gamma Correction**.
   The **Gamma Correction** dialog box appears.

2. Adjust the slider on the **Gamma Correction** dialog box to change the gamma value. Use a value of 1.0 for most LCD-based displays.
11.8 Configure DICOM Settings

You must configure your PACS and other DICOM devices for use with PACS Scan.

1. Click Settings > DICOM to open the DICOM Settings dialog box.
2. Enter the settings described below and click OK.

- **PacsSCAN AE Title**
  The DICOM Application Entity Title (device name) used by PACS Scan when communicating to other devices via DICOM (DICOM Storage SCU).

**Store/Print Settings**

- **Devices**
  A list of DICOM devices (DICOM archive, PACS station, DICOM printer, etc).
  - **Test**
    Click to perform a DICOM association test with the selected DICOM device.
  - **Add**
    Click to add a new DICOM device to the list. See “Adding/Editing Store/Print Devices” below.
  - **Edit**
    Click to edit the selected DICOM device. See “Adding/Editing Store/Print Devices” below.
  - **Remove**
    Click to remove the selected DICOM device from the list.

- **Force user to select destination**
  When this check box is selected, a message and list appear when you try to send an image while multiple store/print devices are configured in the DICOM settings dialog box. If this check box is not selected, the image will be automatically sent to the first device in the list.

- **Aliases / Group multiple store destinations**
  Two or more devices (“destination AE’s”) can be assigned to a single destination group, called an alias. For example, you could create a group containing a local PACS system and an off-site archive under the alias, “Main recipients,” and then send studies to both AE’s in one step. To create an alias, click Add, type a name for the alias, then select destination groups using the corresponding buttons.

**Adding/Editing Store/Print Devices**

This dialog box appears when you click Add or Edit under Devices in the DICOM Settings dialog box. Enter the settings described below and click OK.
Settings

- **Name**
  Enter the name of the device to add/edit.

- **AE Title**
  Enter an AE title for the device.

- **Port**
  Enter the port used by the device.

- **Action**
  Select whether to store or print data to the device. If you select Store, enter the settings described under Compression Settings below. If you select Print, enter the settings described in Printer Settings below.

- **IP Address**
  Enter the IP address of the device.

- **HL7 Send**
  - **Disabled**
    Do not send HL7 update messages.
  - **All Studies**
    Send HL7 update messages for all studies, including studies with hand-typed patient demographics.
  - **Patient Queries**
    Send HL7 update messages only for those studies that do not have hand-typed demographics, e.g., patient lookup through DICOM MWL, archive, or external launch by an EHR/EMR.

- **Settings**
  Click **Settings** to enter detailed HL7 settings.

- **Destination 1/2**
  - **Enable**
    Select to enable destination 1 or 2.
  - **Name**
    Enter a name for the destination.
  - **IP Address**
    Enter the IP address of the destination.
  - **Port**
    Enter the port of the destination.
  - **Template**
    Enter or browse for the path to the template.

- **HL7 Only**
  Select to create an HL7-only destination that does not require you to enter additional DICOM settings.
Compression

PACS Scan includes compression to support faster image transmission and decreased storage requirements. You can adjust compression settings as follows.

- **Documents**
  - **Type**
    - Select None, JPEG 2000 Lossless, JPEG 2000 Lossy, or JPEG Lossy.
  - **Compression Ratio**
    - If you select lossy above, you can select a ratio of 5 to 1, 10 to 1, or 25 to 1.
  - **Encapsulate Imported PDF Files**
    - Select to optimize standard PDF files for exchange in a DICOM imaging environment.

- **Images**
  - **Type**
    - Select None, JPEG 2000 Lossless, or JPEG Lossy.
  - **Convert to Grayscale**
    - Select to automatically convert color images to grayscale.

- **Video**
  - **Type**
    - Select None, JPEG 2000 Lossless, or JPEG 2000 Lossy.
  - **Quality**
    - If you select lossy above, you can select a ratio of 5 to 1, 10 to 1, or 25 to 1.
  - **Enable Multiframe**
    - Select to send video clips as DICOM Multiframe images.
      - **Secondary Capture / Ultrasound**
        - Select the appropriate option for the multiframe image output type.
      - **Convert to grayscale**
        - Select to convert video images/clips from color to grayscale.

Printer Settings

If Print is selected in the Action list, the following settings become available.

- **Lookup Table**
  - **Enable**
    - Select to have the printer reference a specific LUT (lookup table) for consistency between display and print.
  - **Select**
    - Click to browse for and select an LUT.

- **Optical Density**
  - **Min/Max**
    - Enter the minimum and maximum values of optical density to which pixel values can be mapped. Adjust this setting according to the print medium.
● **Scaling**
  
  ● **Magnification**
    
    ● **None**
    Select to print images without magnification.
    
    ● **Maintain Original Size**
    Select to ensure that the original image dimensions are maintained when sent to the printer.
    
    ● **Cubic**
    Select to magnify the image using a cubic interpolation algorithm. This method usually yields the highest image quality, but can be slower than bilinear scaling.
    
    ● **Bilinear**
    Select to magnify the image using a bilinear interpolation algorithm. This method may not yield image quality as high as cubic scaling, but can be faster.
    
  
  ● **DPI**
  Enter the printer output resolution in dots per inch to ensure proper magnification.

● **Advanced**
Click **Advanced** to display a dialog box with the following settings.

  ● **Film orientation**
  Select PORTRAIT or LANDSCAPE.

  ● **Medium type**
  Leave blank, or select CLEAR FILM or BLUE FILM to match the print medium.

  ● **Border density**
  Leave blank for no border, or select BLACK or WHITE for the desired border color.

  ● **Empty image**
  Leave blank, or select BLACK or WHITE to match the print medium.

  ● **Film destination**
  Leave blank, or select Magazine, Processor, or Bin_1 through Bin_5 (for sorters).

  ● **Smoothing**
  Enabled when Magnification is set to Cubic or Bilinear. Select SHARP, SMOOTH, or MEDIUM to control the amount of smoothing.

  ● **Trim**
  Specifies whether to print a trim box around the film. Leave blank to use the printer’s default setting, select YES to include the trim box, or NO to omit the trim box regardless of the printer’s default setting.
Lookup

Enter the settings described below and click **OK**.

- **Enable Patient Lookup**
  Select to enable patient information searches.

- **Enable Last Patient Button**
  Select to enable patient information searches using the Last Patient button.

- **Devices**
  A list of source devices for looking up patient information.
  
  - **Test**
    Click to perform a DICOM association test with the selected DICOM device.
  
  - **Add**
    Click to add a new DICOM device to the list. See “Adding/Editing Lookup Devices” below.
  
  - **Edit**
    Click to edit the selected DICOM device. See “Adding/Editing Lookup Devices” below.
  
  - **Remove**
    Click to remove the selected DICOM device from the list.

Adding/Editing Lookup Devices

A dialog box appears when you click **Add** or **Edit** in the **Lookup** group. Enter the following settings.

- **AE Title**
  Enter the DICOM Application Entity title of the device to search.

- **IP Address**
  Enter the IP address of the DICOM device to search.

- **Port**
  Enter the TCP/IP port of the DICOM device to search.

- **Date Range**
  Select a range of dates to search. Select “All” to search all available data.

- **Future Dates**
  Select this check box to allow worklist searches that are past the current date.

- **Protocol**
  Select the protocol used to search for patient information (DICOM Modality Worklist or DICOM Query/Retrieve).
● **Study UID**
Select the method for assigning study UIDs. DICOM defines a set of images with the same unique study identifier (study UID) as a *DICOM study*.

- **Use Existing UID**
  Use the original study UID received during the lookup.

- **Create New UID**
  Create a new UID (usually results in a new study within PACS).

**Debug**

Select **Enable DICOM Trace** to create detailed logs for debugging DICOM communications.
11.9 XDS Settings

If PACS Scan is licensed for use with XDS repositories, you can enter XDS settings to facilitate sharing of documents between different enterprises. There are two dialog boxes used to enter settings: XDS Fields, and XDS Settings.

XDS Fields

These settings will be sent as metadata each time a document is submitted to any XDS repository or consumer.

1. Click Settings > XDS Fields.
   The XDS Fields dialog box opens.

2. Enter the settings described below and click OK.
   Note The codes entered into the XDS fields must also exist in the XDS repository or the transmission will fail.

   ● Content Type
     Select the type of clinical activity associated with the document.

   ● Class Code
     Similar to the content type, but is associated with the type of document rather than activity.

   ● Type Code
     A continuation of the class code, providing more detail.

   ● Confidentiality Code
     Indicates the sensitivity of the data contained in the document.

   ● Facility Type Code
     The type of clinical facility and/or department within the facility.

   ● Practice Code
     Refers to the clinical specialty associated with the document creation.

   ● Format Code
     Provides more detail on the document origin and type.

XDS Settings

In general, these settings configure PACS Scan to work and communicate with the XDS repository.

1. Click Settings > XDS Settings.
   The XDS dialog box opens.

2. Enter the settings described below and click OK.

   ● Source ID
     A number that identifies PACS Scan as the source of the document to the registry. PACS Scan enters this value automatically.
Repository Settings

- **Name**
  
  The name of the repository.

- **Repository URL**
  
  The URL of the repository.

- **Test**
  
  Click to test the connection to the repository based on the name and URL entered above.

Lookup

- **Enable Patient Lookup**
  
  Select to enable the Lookup button on the **Enter Patient Information** dialog box. This setting only applies when an XDS destination is selected.

- **PDQ Server**
  
  Select one of the following server types to handle patient lookup queries.
  
  - **V2 (HL7)**
    
    - **Address**
      
      Enter the address of the server.
    
    - **Port**
      
      Enter the port of the server.
  
  - **V3 (Web Service)**
    
    - **URL**
      
      Enter the URL of the server.

- **Affinity ID**
  
  Enter the affinity ID for the selected server.

- **Test**
  
  Click to test the connection to the PDQ server based on the settings entered above.

Resolve

- **Enable Patient ID Resolution**
  
  Select if using a PIX server to resolve the local MRN with the global MRN. Data sent to the repository will be identified by the global MRN.

- **PIX Server Address**
  
  Enter the address of the PIX server.

- **Affinity ID**
  
  Enter the affinity ID of the PIX server.

Debug

- **Enable XDS Logging**
  
  Select to log XDS events for debugging purposes.
XDS Fingerprint Settings

For cases in which an institution provides a local certificate for access to devices such as XDS, you can configure PACS Scan so that services can authenticate it by using the SHA1 fingerprint of the X.509 certificate. To configure PACS Scan for these cases, complete the following steps.

1. In Windows, click Start.
2. In the Search box, type `certmgr.msc`, and then press Enter.
3. In the left pane, open the Personal folder tree, and then click Certificates.
4. In the menu bar, click Action > All Tasks > Import, and then follow the prompts to import your certificate.
5. Navigate to the certificate you imported, and then double-click it.
6. In the Certificate dialog box, click the Details tab.
7. In the Field column, click Thumbprint, and then copy all of the values in the lower pane.
8. Open the following file in Windows Notepad or another text editor.
   `{PACS Scan installation folder}\config\xdssettings.xml`
9. Paste the values you copied above into the CertificateFingerPrint section of the xdssettings file.
10. Save the file and exit the text editor.
11.10 Import Settings

These settings assign default folders used for importing images.

1 Click Settings > Import.
   The Import Settings dialog box appears.

2 Enter the following settings and click OK.

**Import Path**

You can specify the default folder for the import **Browse** dialog box.

- **Remember Last Folder**
  If the user changes the default folder in the import **Browse** dialog box, the new folder will be assigned as the default folder (it will appear the next time the user opens the thumbnail selection dialog box).

- **Always Start at This Location**
  Enter a path to a folder, or click **Browse** to select one. The folder selected here will be the default folder in the thumbnail selection dialog box.

**Image Folder**

Type a folder name or click **Browse** and select a folder to be used as the default folder for placing graphic images (on forms, etc.) This box is synchronized with the Image Folder box in the 11.3 Form Settings dialog box.
11.11 Virtual Printer Settings

1 Click Settings > Virtual Printer Settings. The Virtual Printer Settings dialog box appears.

2 Enter the settings described below, then click OK.

Downsample Resolution

Select a downsample resolution to reduce the size of incoming images as needed.

Window/Level

- Convert color to grayscale
  Select to convert color images to grayscale.
- Grayscale Settings
  Enter specific Window and Level settings for the resultant grayscale image if desired.

Settings

- Auto invert
  Select to automatically invert incoming images.
- Always append new pages to current patient
  Select to use the current patient information for every incoming image. If this check box is not selected, PACS Scan prompts you for patient information each time you print.
11.12 Image Exchange Settings

To connect with Lexmark’s image exchange services or those of a third-party vendor:

1 Click **Settings > Image Exchange**.
2 Enter the settings described below, and click **OK**.

**Inbox**
Enter the user name and password used to access your image exchange account.

**Auto Send**
Enter the following settings to control how incoming studies are automatically forwarded to a DICOM device.

- **Enable Auto Send**
  Select to automatically forward studies to a DICOM device after they are downloaded. Forwarded studies are sent “as is” and are not reconciled. You can also select the Retain check box to keep a copy of the study on PACS Scan for reconciliation purposes.

- **Retain**
  Select to retain the study for local processing on PACS Scan when Auto Send is enabled.

- **Calling AE Title**
  Enter the calling AE title.

- **Called AE Title**
  Enter the called AE title.

- **IP Address**
Enter the IP address of the DICOM destination for Auto Send.

- **Port**
Enter the port of the DICOM destination for Auto Send.
11.13 EHR Settings

In addition (or as an alternative) to DICOM sources, you can have PACS Scan Video send study demographics and images to an EHR system. When you click Send, PACS Scan Video saves all current study data and images to an output folder that you specify. The EHR then processes those files and makes them available to EHR users. To configure the EHR in PACS Scan Video, perform the following steps.

Procedure

1. Click Settings > EHR Settings.
   The **EHR Settings** dialog box appears.

2. Enter the following settings and click **OK**.

   - **Enable EHR**
     Select to enable the EHR as a send destination.

   - **Name**
     Type a name for the EHR. This name will appear in the PACS Scan Destination list on the main screen that is visible if multiple destinations are specified.

   - **EHR Type**
     Select your EHR.

   - **Delete Output**
     Select this check box to have PACS Scan Video delete the output folder after the EHR successfully processes its contents.

   - **Output Folder**
     Browse to select a folder, or type its path in the box. You can use placeholders in the path name that cause PACS Scan Video to create different folders based on certain parameters. The following placeholders are available.

     - `<%patientid%>`, `<%accession%>`, `<%currentdatetime%>`, `<%param1%>`, `<%param2%>`, `<%param3%>`
11.14 Users

To modify settings related to users:

1. Click **Settings > Users**.
   The Users dialog box appears.

2. Enter the settings described below and click **OK**.

**Active Directory**

- **Use Active Directory**
  Select to verify all PACS Scan logons using an Active Directory/LDAP server.

- **Server**
  Enter the name or IP address of the Active Directory/LDAP server.

- **Domain**
  Enter the Active Directory/LDAP domain name or IP address.

- **PacsSCAN Administrators**
  One or more users can be assigned administrator rights. Use the buttons to add or delete administrators, or to test administrator rights.

**Local Users**

- **Require User Login**
  Select to verify all login attempts using the local user list.

- **User name**
  Use the buttons to add, edit, or delete local users.

**Enable Auto Logout**

Select the **Enable** check box to force a log off if the program remains idle for the specified number of minutes.
11.15 Defaults

You can edit the default settings used by PACS Scan.

1. Click **Settings > Defaults** to open the **Defaults** dialog box.
2. Enter the settings described below and click **OK**.

**Site Information**

- **Institution**
  Enter the institution name to appear in each document or film. The information will appear in the DICOM Institution Name field (0008, 0080).

- **Department**
  Enter the department name to appear in each film or document. The information will appear in the DICOM Institution Department Name field (0008, 1040).

- **Station**
  Enter the station name to appear in each document or film. The information will appear in the DICOM Station Name field (0008, 1010).

- **Character Set**
  Select the character set for all text entry operations in PACS Scan.

**Device Information**

- **Manufacturer**
  Enter the manufacturer to appear in each document or film. The information will appear in the DICOM Device Manufacturer field (0018, 1016).

- **Model**
  Enter the model name to appear in each document or film. The information will appear in the DICOM Device Model Name field (0018, 1018).

- **Serial no.**
  Enter the serial number to appear in each document or film. The information will appear in the DICOM Serial Number field (0018, 1000).

- **Version**
  Enter the version number to appear in each document or film. The information will appear in the DICOM Software Version field (0018, 0020). The current version of PACS Scan is the factory default.

**Defaults**

- **Modality**
  Select the default modality in the **Enter Patient Information** dialog box.

- **Series no.**
  Enter the series number for scanned documents. If the Series Number field is blank, it will be blank for all scanned documents.
- **Cursor Location**
  Select the initial location of the cursor on the **Enter Patient Information** dialog box.

- **Local Modalities**
  You can customize the modality list by adding or deleting modalities. Enter a modality name in the **Modality** box, then click **Add**. Or, select a modality and click **Delete**. The contents of the local modalities box will be displayed in the **Enter Patient Information** dialog box.

**Description Field**

- **Create Description List**
  Select to add a user-defined list of study descriptions in the Descriptions field of the Enter Patient Information dialog box.

- **Require Description**
  Select to force users to select a description when entering patient information.

- **New Description**
  To add an item to the user-defined list of study descriptions, enter an item in the **New Description** box and click **Add**. To edit an existing item, select the item and click **Edit**. To delete an item, select it and click **Delete**. To set one of the items as the default, select the item and click **Default**.

**Custom Fields**

- **Create Custom Fields**
  Select to add up to two custom fields to the **Enter Patient Information** dialog box. Enter information in the **Label**, **Group**, and **Element** boxes as needed. The new fields will appear under the Description field.

**Require either Patient Name, MRN, or Accession Number for Lookup**

Select to require the information before a lookup is allowed to proceed. This option limits search flexibility, but can help to improve accuracy of results.
11.16 Fields

PACS Scan lets you customize the fields used for entering patient information.

Procedure

1. Click **Settings > Fields**.
   The **Fields** dialog box appears.

2. Adjust the settings described below and click **OK**.
   - **Fill from Worklist**
     Select to auto-fill the field from a DICOM worklist or archive search.
   - **Trigger Lookup**
     Select to trigger a lookup when either a barcode entry occurs or the Enter key is pressed in that field. Note that even when this check box is cleared, you can trigger a lookup by clicking the Lookup button.
   - **Next Field**
     Defines the field that becomes active after the current field when you press tab.

11.17 To Do List

You can create a “To Do” list of studies to be scanned or processed. If the current scan is taking a long time to finish, for example, you can add additional studies to the list while you are waiting.

Procedure

1. To display the To Do list, click **Settings > Enable To Do List**.
2. Click **Add** to open the **Enter Patient Information** dialog box.
3. Enter or look up the patient information, then click **Continue**.
   The study is added to the To Do list. To remove a study, select it and click **Delete**.
11.18 Buttons

The PACS Scan main screen contains two to five buttons for commonly used functions. You can change which buttons appear using the Buttons dialog box.

1 Click Settings > Buttons.
   The Buttons dialog box appears.

Buttons

- **Left Button**
  Selects the button to display on the upper left.

- **Right Button**
  Selects the button to display on the upper right.

- **Lower Left Button**
  Selects the button to display on the lower left.

- **Lower Right Button**
  Selects the button to display on the lower right.

TWAIN Icon

- **Scanner/Camera**
  Selects the icon to use for the TWAIN device.
12 Viewing Logs

You can search for and view application and audit logs using a separate utility called the PACS Scan Log Viewer. Use the following procedure to open the viewer utility.

Procedure

1. Click **Start > All Programs > Lexmark > PACS Scan > Log Viewer**.
   The Log Viewer starts, and opens with the Error/Audit Logs tab displayed.

2. Click a log title in the upper left panel. Log entries appear in the lower panel.
   You can click an entry to display its details in the upper right panel.
   
   **Export to CSV**
   If desired, click **Export to CSV** to export the log to a CSV file for viewing and editing in other programs such as Microsoft Excel.

**DICOM Trace Files tab**

This tab is primarily used by Lexmark service personnel for troubleshooting purposes. Here you can view, copy, and save DICOM trace and raw capture data. Data is only available if you select the Enable DICOM Trace check box in the DICOM Settings dialog box, or the Capture Raw Bytes check box in other programs.