

VistA Imaging Exchange (VIX) STS Token Support

MAG*3.0*329

Enhanced Image Viewer User Guide



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Table of Contents

1. Introduction	8
1.1. Purpose	8
1.2. Document Orientation	8
1.2.1. Organization of the Manual	8
1.2.2. Assumptions	9
1.2.3. Coordination	9
1.2.4. Disclaimers	9
1.2.4.1. Software Disclaimer	10
1.2.4.2. Documentation Disclaimer	10
1.2.5. Documentation Conventions	10
1.2.6. References and Resources	10
1.3. Enterprise Service Desk and Organizational Contacts	11
2. System Summary	12
2.1. System Configuration	12
2.2. Data Flows	12
2.3. User Access Levels	12
2.4. Continuity of Operation	13
3. Getting Started	14
3.1. Logging On	14
3.2. System Menu and Main Viewer Page	15
3.3. Exit System	16
3.4. Caveats and Exceptions	16
4. Using the Software	17
4.1. Launching the Viewer	17
4.2. The Main Viewer Page	19
4.2.1. The Main Toolbar	20
4.2.2. Thumbnails and Image Loading	22
4.2.3. The Image Navigation Toolbars	24
4.3. Working with Images	25
4.3.1. Manipulating View Layout	25
4.3.2. Viewing DICOM Images	25
4.3.2.1. Viewing Stacked Images	25
4.3.3. Viewing Multi-Page TIFF Images	26
4.3.4. Viewing Normal Web Images	26
4.3.5. Viewing Documents	27
4.3.6. Printing an Image	27
4.3.7. Exporting an Image	28
4.3.8. External Links	29
4.3.8.1. Release of Information (ROI) Print Queue Status and ROI Submission	30

4.3.9.	Viewing Information in an Image	31
4.3.10.	Changing the Settings of an Image	32
4.3.11.	Changing the Study Layout	37
4.3.12.	Presentation State	37
4.3.13.	Using the Measurements Tools	38
4.3.14.	Using the RGB Tool	40
4.3.15.	Conditions for Image Viewer Functions.....	40
4.4.	Image Quality Assurance (QA).....	41
4.4.1.	Image Information	43
4.4.2.	Image QA.....	44
4.4.3.	Viewing and Setting Image Status	49
4.4.4.	Image QA Report	50
4.5.	Closing the Viewer	52
5.	Troubleshooting	53
5.1.	Special Instructions for Error Correction	53
6.	Acronyms and Abbreviations	54

Table of Figures

Figure 1: Image Viewer System Summary	12
Figure 2: Main Viewer Page Snapshot	15
Figure 3: Loading Page	17
Figure 4: Images Not Loading	18
Figure 5: Main Viewer Page	19
Figure 6: Main Toolbar	20
Figure 7: Sample Disabled Toolbar Button.....	20
Figure 8: Main Viewer Page with Thumbnail Panel.....	22
Figure 9: Sample Image Navigation Toolbars	24
Figure 10: Frame Rate	24
Figure 11: Main Viewer Page with Images Loaded	26
Figure 12: PDF is Not Ready Status in the Lower Right Corner.....	26
Figure 13: PDF is Ready Status in the Lower Right Corner	26
Figure 14: Main Viewer Page with a Document Loaded.....	27
Figure 15: Print Menu.....	27
Figure 16: Print Menu - Device Selection	28
Figure 17: Exporting an Image	29
Figure 18: External Links Button in the Top Right Corner	29
Figure 19: External Links Menu.....	29
Figure 20: ROI Print Queue Status	30
Figure 21: Print Queue	30
Figure 22: DICOM Attributes	31
Figure 23: Image Metadata	31
Figure 24: Settings Menu	32
Figure 25: Annotations Preferences.....	32
Figure 26: Measurement Preferences	33
Figure 27: Ellipse and Rectangle Preferences	33
Figure 28: Label Preferences	34
Figure 29: Annotation Preferences.....	34
Figure 30: Cine Preferences	35
Figure 31: Layout Preferences	35
Figure 32: Layout Preference Choices	36
Figure 33: Copy Attributes Preferences	36
Figure 34: Layout Attribute Preference Choices.....	37
Figure 35: Presentation State Button	37
Figure 36: Presentation State Menu.....	37
Figure 37: Measurement Tool View 1.....	38
Figure 38: Measurement Tool View 2.....	38
Figure 39: Measurement Tool View 3.....	38

Figure 40: 2D Length Calibration	39
Figure 41: Hounsfield Measurement Tools.....	39
Figure 42: RGB Tool Button	40
Figure 43: Main Viewer Page with Image Loaded	41
Figure 44: External Links Menu on Main Viewer Page.....	42
Figure 45: Image Information	43
Figure 46: Image Editor.....	44
Figure 47: QA Review Page.....	44
Figure 48: QA Filters and Date Range	45
Figure 49: Search Filter Details	45
Figure 50: QA Status Choices	46
Figure 51: Percentage of Images to Display	46
Figure 52: Saved Filters	47
Figure 53: QA Filter Results	48
Figure 54: QA Filter Results and Image Information	48
Figure 55: QA Thumbnail	49
Figure 56: QA Review Status Update Menus.....	49
Figure 57: QA Statistics Reports Page.....	50
Figure 58: Run QA Report.....	51
Figure 59: View QA Report	51
Figure 60: Viewer Close Button.....	52
Figure 61: Viewer Version Number.....	53
Figure 62: Viewer Information Dialog	53

Table of Tables

Table 1: Toolbar Icons - Names, Functions, and Descriptions	20
Table 2: Thumbnail Elements, Names, Functions, and Descriptions	23
Table 3: Functions and Uses of the Image Navigation Toolbar Buttons	24
Table 4: Viewing Images and Manipulating View Layout	25
Table 5: Conditional Image Viewer Functions	40

1. Introduction

1.1. Purpose

This manual describes the "Viewer" web application which is also known as the:

- Central VistA Imaging Exchange (CVIX) Viewer
- Enhanced Image Viewer
- Image Viewer
- VistA Imaging Exchange (VIX) Viewer
- VistA Imaging Viewer

The Viewer displays and provides tools for clinical and medical media in web applications like the Joint Legacy Viewer (JLV). The media can be:

- Audios
- Data
- Documents (typically medical reports, with extensions of DOC, PDF, RTF, and TXT)
- Images
 - Digital Imaging and Communications in Medicine (DICOM)
 - Non-DICOM, such as Joint Photographic Experts Group (JPEG) and Tag Image File Format (TIFF)
- Videos

To keep things simple, henceforth in this document, we use the term images to identify all media types unless a specific type is applicable. We also use the term VIX to mean CVIX or VIX.

This manual assumes you are familiar with web applications. This manual also assumes you are using the Viewer with the latest release level. The release level appears on this document's cover page and at the top of its Revision History page. Section 5 describes how to see the complete release number on the main Viewer page.

1.2. Document Orientation

1.2.1. Organization of the Manual

This document contains the following sections to assist you in using the Viewer:

- **Section 1 – Introduction**
Describes the document and helps you to follow the document.
- **Section 2 – System Summary**
Describes a summary of the Viewer.
- **Section 3 – Getting Started**
Describes a quick overview to start using the Viewer.
- **Section 4 – Using the Software**
Describes in-depth instructions how to use the Viewer. References the main and image

navigation toolbars and buttons and explains how to close the Viewer. Describes how to use the Quality Assurance features of the Viewer.

- **Section 5 – Troubleshooting**

Describes how to access some of the information contained in the Viewer. The information assists you in troubleshooting some issues that might occur when using the Viewer.

- **Section 6 - Acronyms**

Defines the Acronyms and Terms used and referenced in this document.

1.2.2. Assumptions

The user has been provided the appropriate active roles, menus, and security keys required for the VIX Viewer. Also, the user has basic knowledge of the use of a web browser, menu options, and navigation tools.

1.2.3. Coordination

Use of the Viewer is subject to the following provisions:



Caution: Federal law restricts this device to use by or on the order of either a licensed practitioner or persons lawfully engaged in the manufacture or distribution of the product.



The Viewer is not intended for the primary interpretation of radiology exams. When the Viewer installs on approved and properly maintained hardware, primary interpretation of other image types is permissible by licensed practitioners at their discretion.



The Food and Drug Administration (FDA) classifies VistA Imaging and the Viewer (as a component of VistA Imaging) as a medical device. Unauthorized modification to VistA Imaging, including the Viewer, such as installing unapproved software, adulterates the medical device. The use of an adulterated medical device violates US federal law (21CFR820).

1.2.4. Disclaimers

This is a controlled document. No changes to this document may be made without the express written consent of the VistA Imaging Office of Enterprise Development group.

While every effort has been made to assure the accuracy of the information provided, this document might include technical inaccuracies and/or typographical errors. Changes are periodically made to the information herein and incorporated into new editions of this document. Product names mentioned in this document might be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

- VistA Imaging Office of Enterprise Development Department of Veterans Affairs
- Internet: <http://www.va.gov/imaging>
- Imaging VistA Imaging SharePoint: **REDACTED**

1.2.4.1. Software Disclaimer


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1.2.4.2. Documentation Disclaimer

The appearance of external hyperlink references in this manual does not constitute an endorsement by the VA of the website or the information, products, or services contained therein. The VA does not exercise any editorial control over the information you may find at these locations. Such links are provided and are consistent with the stated purpose of the VA.

1.2.5. Documentation Conventions

This document uses the following conventions:

- Button names, menu names, and menu option names are shown in **Bold**.
- A vertical bar is used to separate menu choices. For example: "Click **File | Open**" means: "Click the **File** menu, then click the **Open** option."
- Keyboard shortcuts are shown like **Ctrl+C** which means to press the control (Ctrl) key on your keyboard, keep it pressed, and press the C key.
- When this document is used online, hyperlinks are indicated by [blue text](#).
- Useful or supplementary information is shown in a **Tip**. Important or required information is shown in a **NOTE**.
- Critical information is indicated by: 

1.2.6. References and Resources

Additional information about VistA Imaging can be found at:

- VistA Imaging: <http://www.va.gov/vdl/application.asp?appid=105>

1.3. Enterprise Service Desk and Organizational Contacts

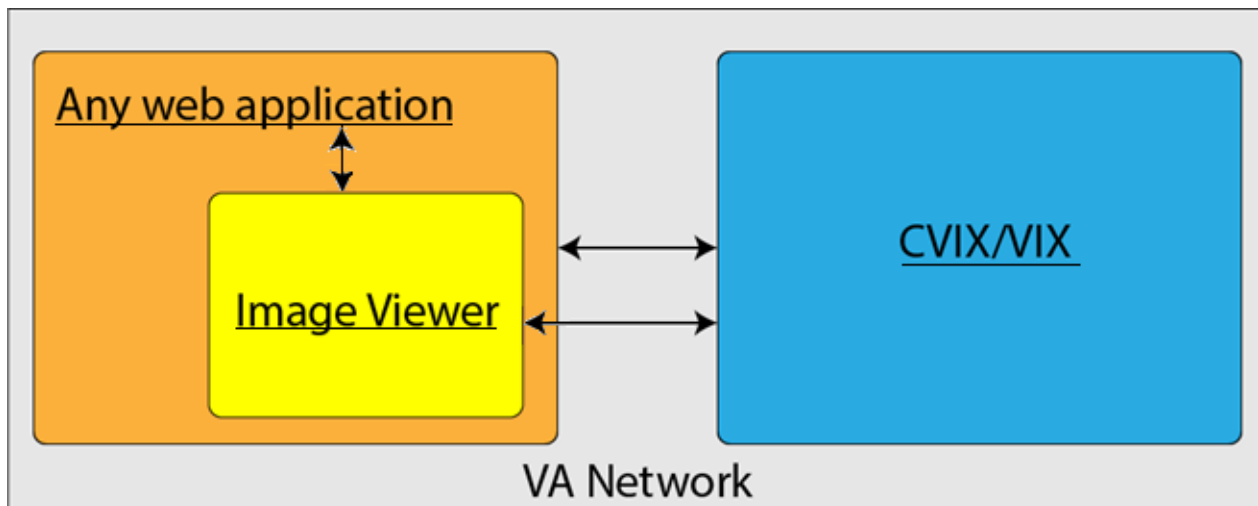
If you encounter any problems using the Viewer, contact your local Imaging Coordinator or support staff. If the problem cannot be resolved locally, use YourIT Service Desk Manager to place a service request, or contact the Enterprise Service Desk at **REDACTED**.

2. System Summary

Vista Imaging provides formal authorization to a web application to embed, or host, the Image Viewer. The web-hosting application authorizes users to use its own functions as well as the functions in the Image Viewer.

Web-hosting applications, such as the JLV, embed the Image Viewer (Figure 1) in the host application's web page. The Image Viewer communicates with the CVIX/VIX application. The host application might also directly communicate with the CVIX/VIX application. The Image Viewer operates inside the VA network.

Figure 1: Image Viewer System Summary



2.1. System Configuration

The Viewer adds image display capabilities to web applications in a similar way as the Clinical Display desktop application adds image display capabilities to the Computerized Patient Record System (CPRS).

The Viewer is a web-based application that provides a subset of features of Clinical Display. This means it does not supply all features that Clinical Display offers.

2.2. Data Flows

The Viewer is a web application that enables you to access patient images using VA approved versions of Chrome or Edge.

The Viewer allows users to locate and display any patient images available to the VA from Vista Imaging, including Department of Defense (DoD) images.

2.3. User Access Levels

Users use a service account in Vista with the DICOM VISA [MAG DICOM VISA] and CPRSChart [OR CPRS GUI CHART] secondary menu options, at a minimum, to access the Image Viewer through the web application.

2.4. Continuity of Operation

Since the Viewer is embedded in another application, the Viewer relies on the other application's continuity of operation.

3. Getting Started

After logging into the web-hosting application and selecting a patient study, the hosting application launches the Viewer to display the study on its main page (Section 3.2).

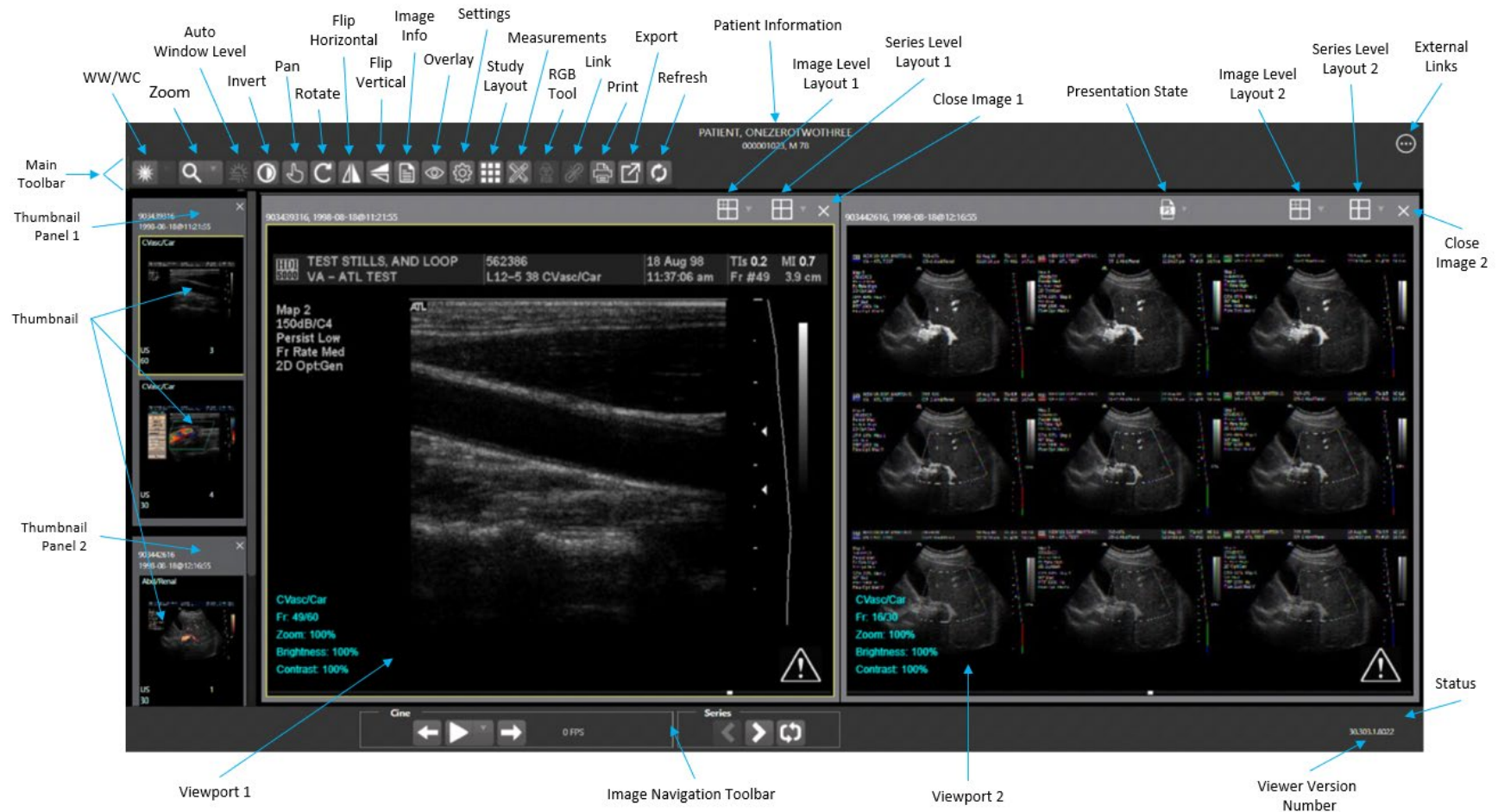
3.1. Logging On

To access the Viewer and authenticate, the user logs on through the web-hosting application. The hosting application logs in users to authenticate their credentials by getting a security token. This token is used throughout the Viewer's web pages.

3.2. System Menu and Main Viewer Page

The image below (Figure 2) is a quick snapshot of the main Viewer page. Section 4.2 provides a complete description.

Figure 2: Main Viewer Page Snapshot



3.3. Exit System

To exit the system, close the Viewer's web pages that are open in the web browser tab(s).

3.4. Caveats and Exceptions

If encountering issues, clear the cache in the web browser for the Viewer, and refresh the page.

4. Using the Software

This section describes how to use the Viewer web application.

4.1. Launching the Viewer

Upon launching the Viewer, the following loading page (Figure 3) displays while the Viewer loads the study's images:

Figure 3: Loading Page



NOTE: The VA's and your network's bandwidth dictate the amount of time it takes to transfer the images. Some images can be very large which usually means they take a while to load, sometimes even minutes. The faster the bandwidth, the faster the computer can transfer data.

The first time a study launches, the Viewer pre-processes the study's images and loads them into a cache on the VIX server. Caching images reduces the load time for subsequent study views.

If there is trouble loading one or more images, the following page displays (Figure 4) with the option to either proceed or empty the cache and try again. If you select proceed, the study loads without the problem images. If you choose to empty the cache and retry, the Viewer attempts to re-process all the images for the study.

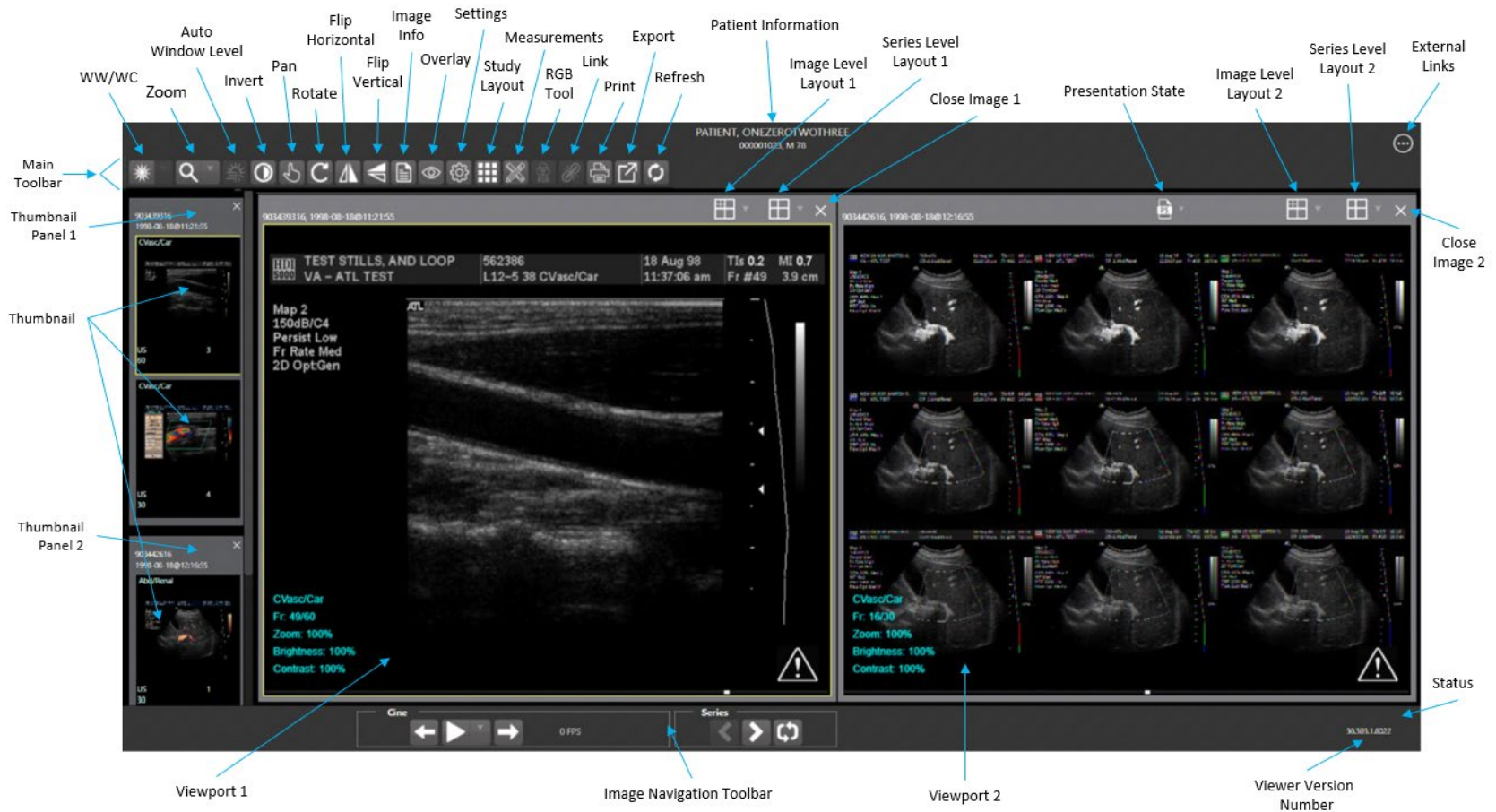
Figure 4: Images Not Loading



4.2. The Main Viewer Page

When the main Viewer page opens, it shows the patient information, main toolbar, external links button, thumbnail panel(s), viewport(s), image navigation toolbar (Section 4.2.2), status, and Viewer version number (Figure 5). The Viewer displays thumbnail placeholders until the thumbnails are retrieved, then displays the images in the viewport(s). Section 4.3.15 describes the components that appear and are enabled according to the active viewport's image as indicated by a yellow outline.

Figure 5: Main Viewer Page



4.2.1. The Main Toolbar

The main toolbar (Figure 6) provides buttons to access the Viewer functions while viewing an image. The Viewer enables (brightens) and disables (grays out, Figure 7) the buttons depending on the image type in the active viewport. See Figure 6 for an image of the toolbar.

Figure 6: Main Toolbar

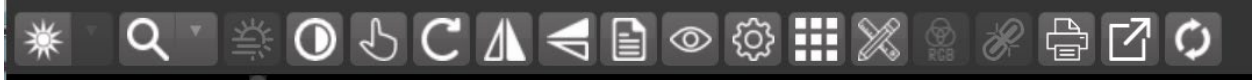







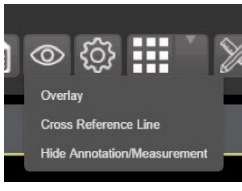





Figure 7: Sample Disabled Toolbar Button






Table 1 describes the functions and uses of each button in the toolbar.

Table 1: Toolbar Icons - Names, Functions, and Descriptions

Button Icon	Button Name and Function	Description
	WW/WC (Window Level)	Manually click and drag an image to make the Viewer alter the grayscale value of the image. For Computerized Tomography (CT) images, a preset dropdown menu displays with the following options: Default (the image as initially loaded and displayed), Abdomen, Bone, Brain, Head/Neck, Lung, and Customize.
	Zoom	Click and drag on an image to zoom in and out. A preset dropdown menu provides the options to resize the image to 100%, or Fit to Window, or Fit Width to Window, or Fit Height to Window, or to Customize the sizing.
	Auto Window Level	Click and drag a rectangular area on an image to adjust the window level based on the image's minimum pixel value.
	Invert	Invert an image so that dark is light, and light is dark.

Button Icon	Button Name and Function	Description
	Pan	Click and drag an image to move its viewing area.
	Rotate	Rotate an image 90 degrees clockwise.
	Flip Horizontal	Flip an image horizontally.
	Flip Vertical	Flip an image vertically.
	View Image Info	Display an image's DICOM attributes and metadata.
	Overlay	Toggle the overlay on and off. The Cross Reference Line option toggles the scout lines on and off. The Hide Annotation/Measurement option toggles the annotations and measurements on the image. The 6000 Overlay option appears when the image contains a 6000 Overlay and toggles its display on and off.
	Settings	Set the Annotation, Cine, and Layout Preferences. For more information on the settings, see Section 4.3.10 below.
	Study Level Layout	Set the layout for displaying the study's viewports to 1x1, 1x2, 1x3, 2x1, 2x2, 2x3, 3x1, 3x2, or 3x3 tiles.
	Measurements	Measure the 2D Length, the Angle Tool, 2D Point, 2D Length Calibration, or Delete All according to Section 4.3.13.
	RGB Tool	Access the Red Green Blue (RGB) Tool as described in Section 4.3.14.
	Link	Select two image stacks and scroll.

Button Icon	Button Name and Function	Description
	Print	Access the Print Tool as described in Section 4.3.6.
	Export	Access the Export Tool as described in Section 4.3.7.
	Refresh	Refresh the page to the original settings without reloading the images from the server.

4.2.2. Thumbnails and Image Loading

The following describes the steps that occur when the main Viewer page displays:

1. The thumbnail panel(s) display on the left side of the page.
2. The Viewer selects the first thumbnail, indicated by a yellow outline.
3. The Viewer displays the loading progress (Figure 8).
4. The Viewer displays the loaded image associated with the thumbnail in the viewport.
5. After the above steps are complete, you can click the thumbnail for your desired image if it isn't already selected, and its image displays in the viewport. Section 4.3 describes how to work with images.

Figure 8: Main Viewer Page with Thumbnail Panel

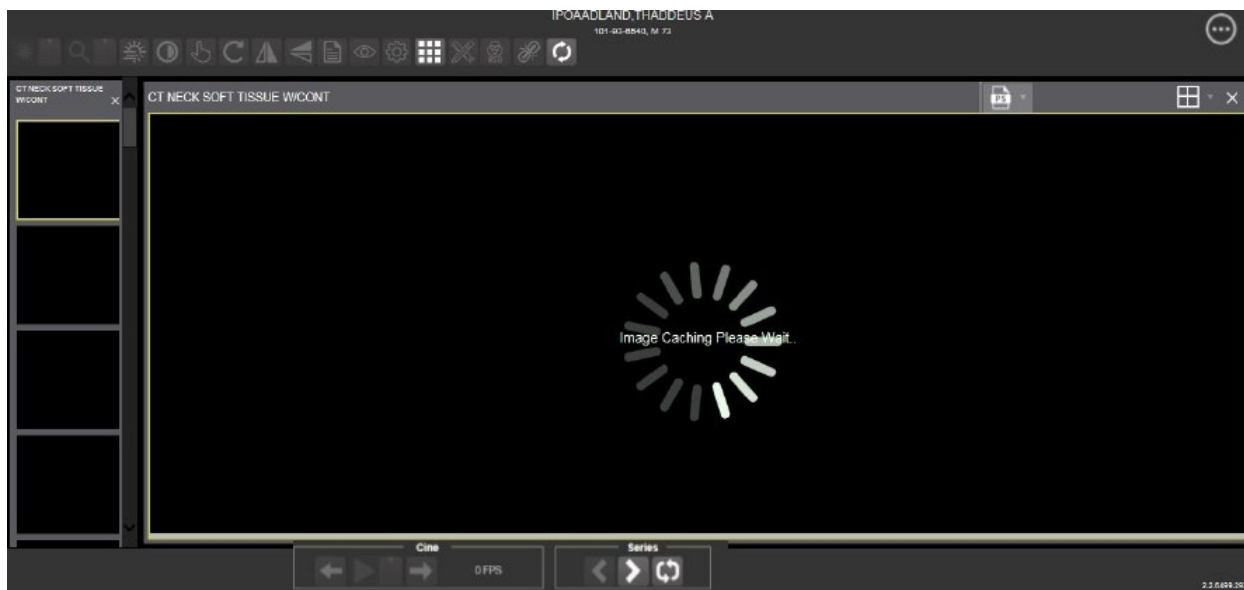




Table 2 describes the thumbnail elements.

Table 2: Thumbnail Elements, Names, Functions, and Descriptions

Web Page Element	Element Name and Function	Description
	<p>Thumbnail</p>	<p>The title of the series appears at the top left of the thumbnail. The image type appears at the bottom left, with the number of images in the series directly below that. The series number displays on the bottom right of the thumbnail. For DICOM images, the modality code appears on the bottom left.</p>
	<p>Thumbnail Panel</p>	<p>To adjust the size of the thumbnail panel, click and drag the right edge of the panel to the left or right. This affects how many thumbnails are shown per row within the panel but does not alter the size of the thumbnails. When hovering over the panel with stacked images, if you have a mouse wheel, you can use it to scroll between the different series thumbnails. Use drag-and-drop to drag thumbnails to the viewport. A yellow outline appears around the thumbnail that currently shows in the viewport.</p>

4.2.3. The Image Navigation Toolbars

An image navigation toolbar appears automatically when the Viewer determines it applies to the image displayed in the active viewport. Figure 9 shows samples of these toolbars.

Figure 9: Sample Image Navigation Toolbars

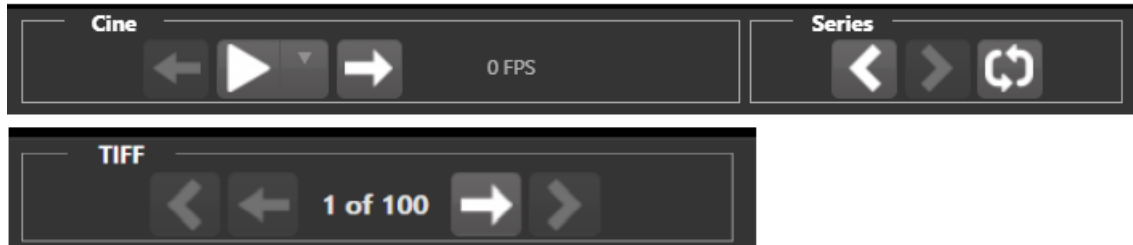


Table 3 describes the functions and uses of each button in the image navigation toolbar.

Table 3: Functions and Uses of the Image Navigation Toolbar Buttons

Button Icon	Button Name and Function	Description
	Previous Series and Next Series	Navigate through the study's series. Alternatively, you can click the thumbnail for the series to view.
	Previous Image and Next Image	Navigate through the active series' or TIFF's images. If you have a mouse wheel, you can also use it to scroll through the frames when you hover over the viewport.
	Play and Stop	Begin and end playing through a cine image scene. The down arrow changes forward or backward direction.
	Repeat	Select to repeat the series. Deselect to play through the series before repeating the series.

While a series plays, a number (Figure 10) appears in the navigation toolbar. The number is the frame rate the series is currently playing.

Figure 10: Frame Rate



- **NOTE:** The first time a series plays, it might play slower while caching the images. Once the images are cached, the series plays faster.

4.3. Working with Images

If the image in the active viewport is not the one you desire, you can:




- Click another viewport, if any.
- Click the thumbnail for your desired image, and its image displays in the viewport.

The remainder of this section explains how to work with images.

4.3.1. Manipulating View Layout

Table 4 describes the buttons and functions to change how the images display in the viewport.

Table 4: Viewing Images and Manipulating View Layout

Button Icon	Button Name and Function	Description
	Image Level Layout	Manipulates the number and position of the series' images that can display on the viewport.
	Series Level Layout	Manipulates the number and position of the study's series that can display on the viewport.
	Close Image	Closes the currently selected image from the viewport.

4.3.2. Viewing DICOM Images

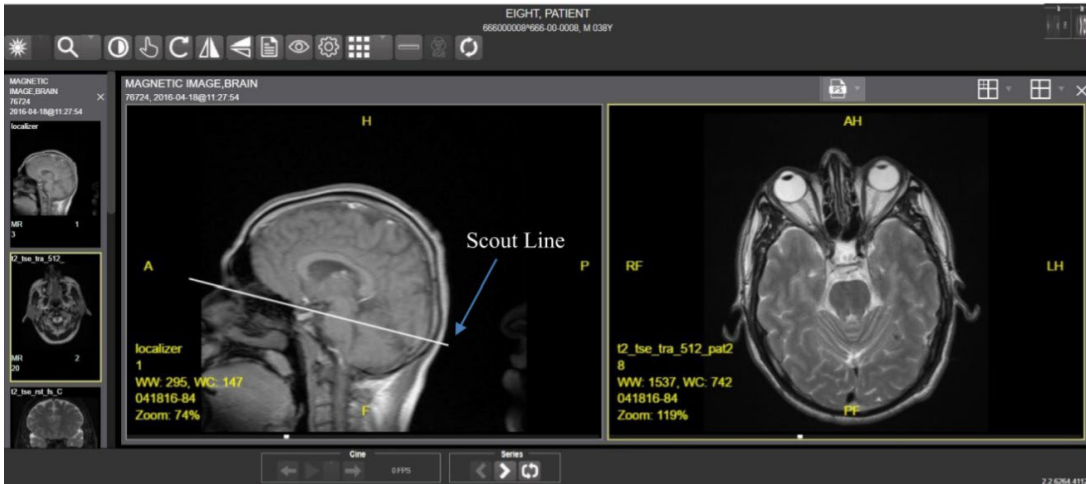
The Viewer displays DICOM images by simulating Picture Archiving and Communication System (PACS) functionality. For example, when a CT scan displays, you can manipulate its window level, zoom, annotate, and so on as described in Sections 4.2.1 and 4.2.3. You can work with other modalities in a similar fashion, but they do not support window leveling.

4.3.2.1. Viewing Stacked Images

Stacked images (such as for the CT, MR, and US modalities) represent a series, each with its own thumbnail in the thumbnail panel. When viewing a stacked image series and you have a mouse wheel, you can use it to scroll between the images in the stack when hovering over the thumbnail panel. You can also scroll through the stack by clicking the **Series** buttons described in Section 4.2.2.

Upon scrolling, if multiple series display in the viewport, scout lines appear on the images of the other series in a different plane to indicate what part of the body the series displays as shown in Figure 11 below.

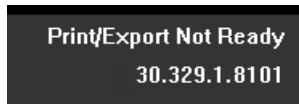
Figure 11: Main Viewer Page with Images Loaded



4.3.3. Viewing Multi-Page TIFF Images

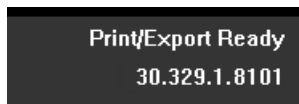
When an image is in the TIFF format and contains multiple pages, the Viewer converts each page to the JPEG format to display it easily and quickly in the browser. Meanwhile, behind the scenes, the Viewer converts the entire TIFF file to PDF, sets the status to indicate the PDF is not yet ready (Figure 12), and disables the **Print** and **Export** main toolbar icons.

Figure 12: PDF is Not Ready Status in the Lower Right Corner



When the PDF is ready, the Viewer updates the status (Figure 13), enables the **Print** and **Export** main toolbar icons, and displays **Print** and **Export** options on the context menu as described in Sections 4.3.6 and 4.3.7.

Figure 13: PDF is Ready Status in the Lower Right Corner



You can use the **Next Image** and **Previous Image** navigation toolbar icons to move the displayed images forward and backward as described in Section 4.2.3.

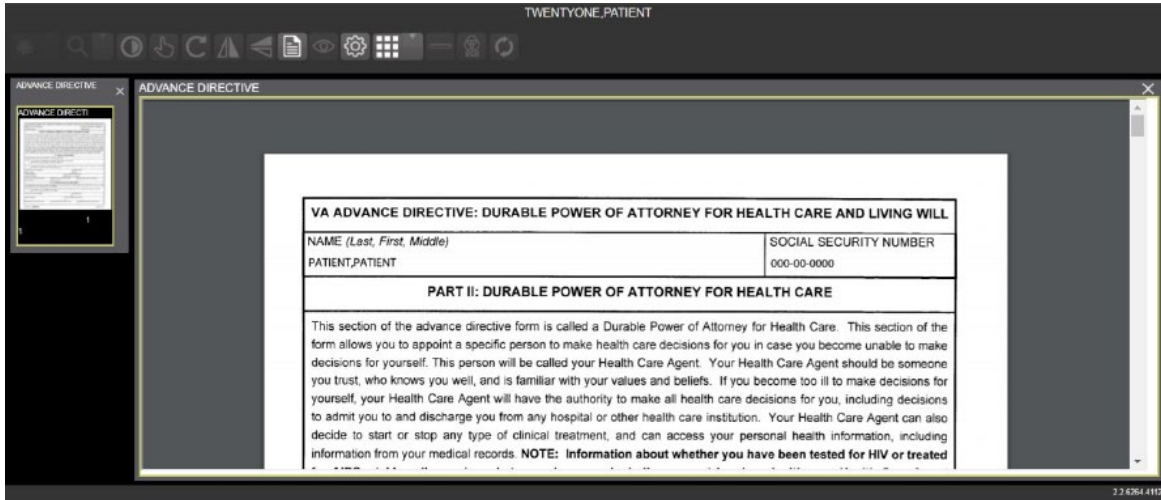
4.3.4. Viewing Normal Web Images

The Viewer enables most main toolbar icons when displaying normal web images such as JPEG and single-page TIFFs. Window leveling, however, does not apply.

4.3.5. Viewing Documents

When viewing a document, the document viewport displays (Figure 14), and the Viewer disables most of the main toolbar icons. The display might look different than shown depending on the browser.

Figure 14: Main Viewer Page with a Document Loaded



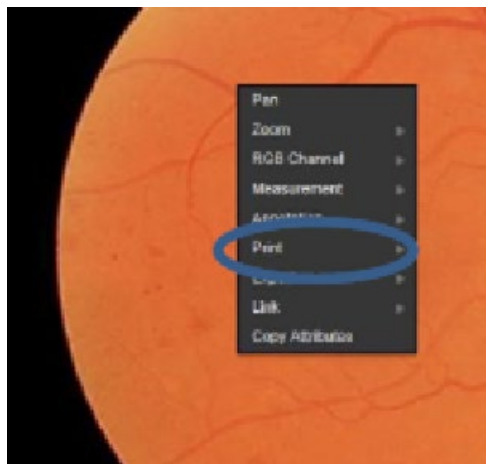
4.3.6. Printing an Image

To print an image, do one of the following:

- Click the **Print** main toolbar icon.
- Right-click on the image to display a context menu. See Figure 15 below for an example.

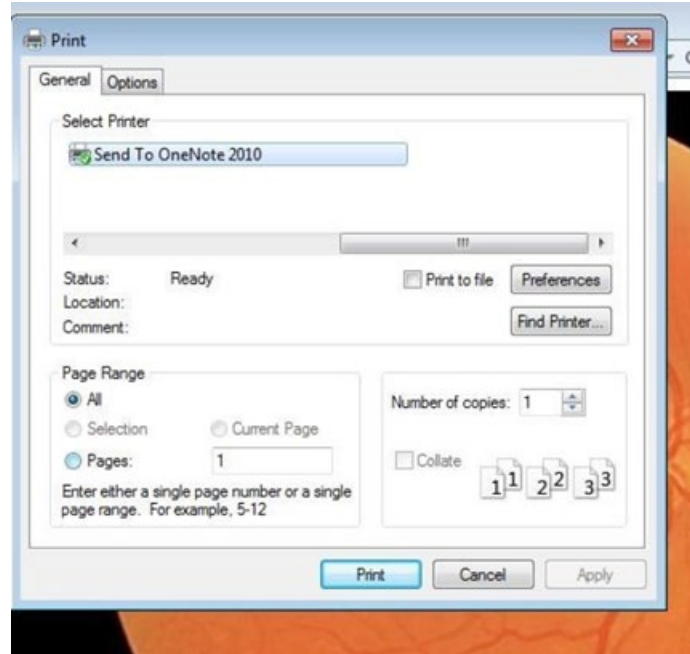
NOTE: For non-Claims users, their VistA account requires the MAG ROI or MAG SYSTEM keys to print an image. Claims users have special permission to print.

Figure 15: Print Menu



After selecting the print option, you can select print options. You must select a print reason and enter your digital signature. After selecting the print options, the image opens in a new tab in a printable form. You can now print the image by selecting **File | Print**, or **Ctrl+P**. See Figure 16 below for an example.

Figure 16: Print Menu - Device Selection



4.3.7. Exporting an Image

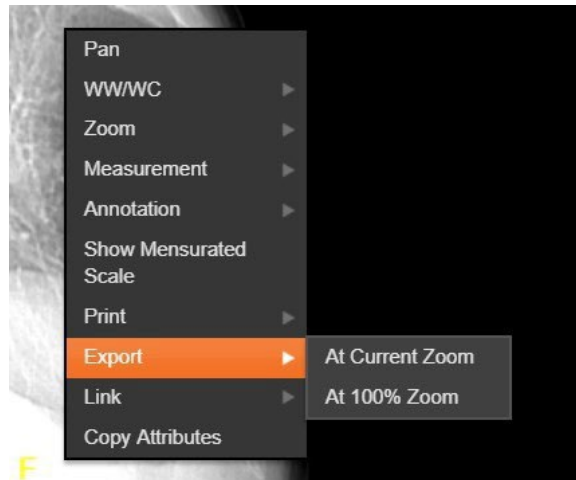
To export an image, do one of the following:

- Click the **Export** main toolbar icon.

- Right-click on the image to display a context menu. See Figure 17 for an example.

NOTE: For non-Claims users, their VistA account requires the MAG ROI or MAG SYSTEM keys to export an image. Claims users have special permission to export.

Figure 17: Exporting an Image



After selecting the desired zoom, you must enter the digital signature before the image exports.

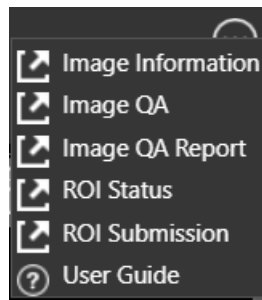
4.3.8. External Links

Click the button in the top right corner (Figure 18) of the Viewer page to view the **External Links** menu (Figure 19).

Figure 18: External Links Button in the Top Right Corner



Figure 19: External Links Menu



4.3.8.1. Release of Information (ROI) Print Queue Status and ROI Submission

To view the ROI Print Queue Status, click **ROI Status** on the **External Links** menu, and the following screen displays (Figure 20).

Figure 20: ROI Print Queue Status

Patient Name	SSN	Patient ID	Status	Last Updated	DICOM Routing
ZZZRETFOURSIXTYFIVE_PATIENT	****2445	dfv(21)	EXPORT_QUEUE	02/21/2018@14:55:55	
ZZZRETFOURSIXTYFIVE_PATIENT	****2445	dfv(21)	EXPORT_QUEUE	02/21/2018@20:27:00	
ZZZRETFOURSIXTYFIVE_PATIENT	****2445	dfv(21)	EXPORT_QUEUE	02/22/2018@11:50:31	
ZZZRETFOURSIXTYFIVE_PATIENT	****2445	dfv(21)	EXPORT_QUEUE	02/23/2018@10:52:47	
ZZZRETFOURSIXTYFIVE_PATIENT	****2445	dfv(21)	EXPORT_QUEUE	02/24/2018@09:07:05	
TWENTYONE_PATIENT	****0021	icn(10121V596061)	FAILED_LOADING_STUDY	01/03/2018@08:17:09	
TWENTYONE_PATIENT	****0021	icn(10121V596061)	FAILED_LOADING_STUDY	01/03/2018@08:20:19	
TWENTYONE_PATIENT	****0021	icn(10121V596061)	ROI_COMPLETE	undefined	

To perform ROI Submissions, click **ROI Submission** on the **External Links** menu and the following screen displays (Figure 21).

Figure 21: Print Queue

Procedure	Date	Location	Release
RAD CT	2018-08-28T16:44:00-04:00	VA	<input type="checkbox"/>
	2018-08-28T16:44:00-04:00	VA	<input type="checkbox"/>
	2018-08-28T16:44:00-04:00	VA	<input type="checkbox"/>
CLIN	2018-06-25T00:01:00-04:00	VA	<input type="checkbox"/>
RAD PR	2017-10-11T13:02:00-04:00	VA	<input type="checkbox"/>
XRAY	2017-10-11T13:02:00-04:00	VA	<input type="checkbox"/>
CLIN	2017-09-26T00:01:00-04:00	VA	<input type="checkbox"/>
CON/PROC	2017-09-20T10:44:00-04:00	VA	<input type="checkbox"/>
CON/PROC	2017-09-20T10:44:00-04:00	VA	<input type="checkbox"/>
RAD CT	2017-09-12T18:43:00-04:00	VA	<input type="checkbox"/>

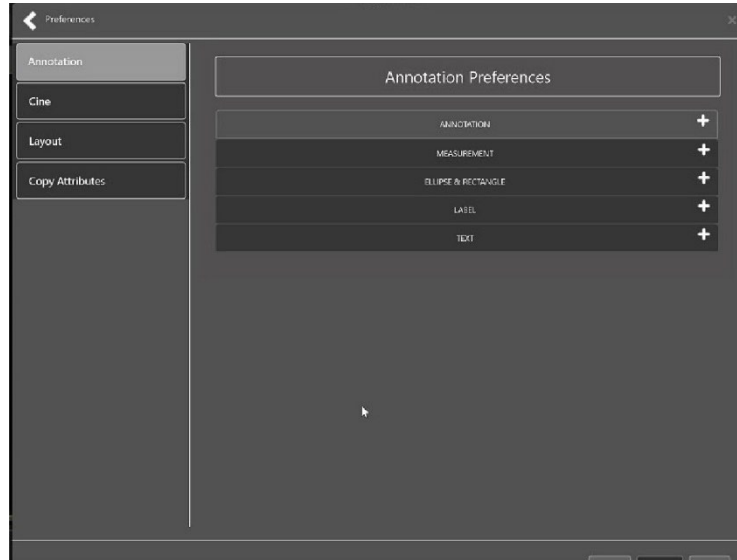
To print:

- Select one or more items and click **Submit ROI CD Request**, where CD stands for Compact Disc.
- Choose the target printer or CD (for DICOM images only) and the reason for printing.
- Enter the electronic signature. The selected items print to the chosen target.

4.3.10. Changing the Settings of an Image

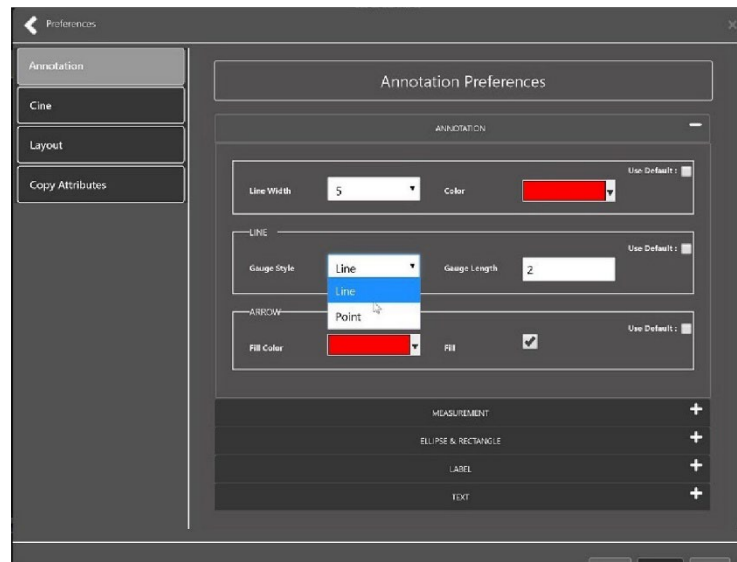
Select the **Settings** button to view or update the settings options (Figure 24).

Figure 24: Settings Menu



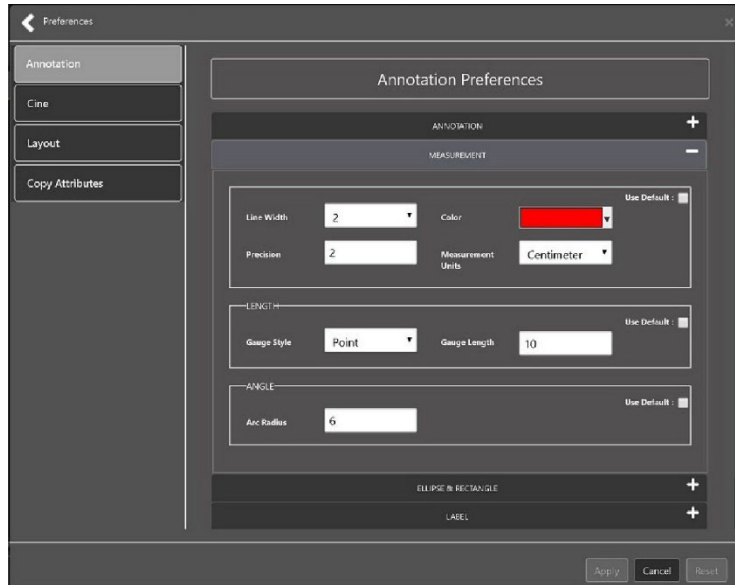
Click **Annotation**, and the following screen displays (Figure 25).

Figure 25: Annotations Preferences



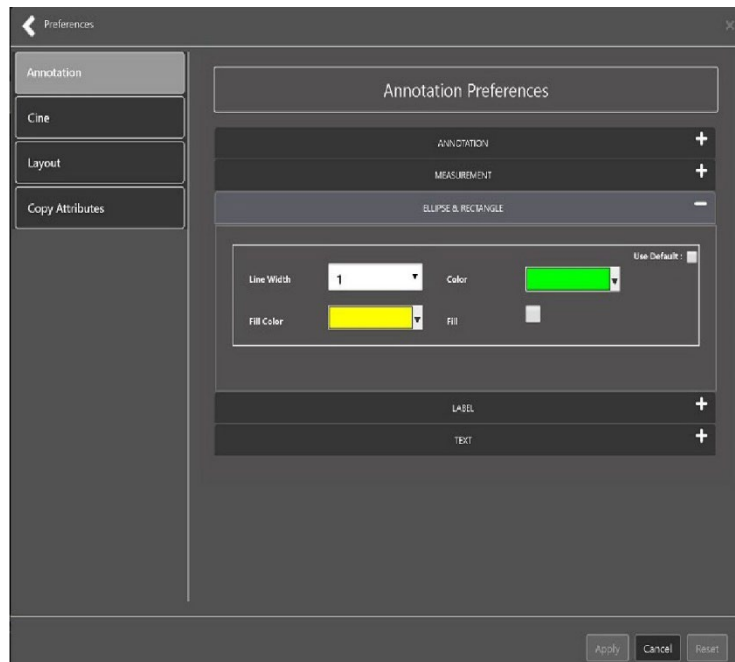
Click **Measurement**, and the following screen displays (Figure 26).

Figure 26: Measurement Preferences



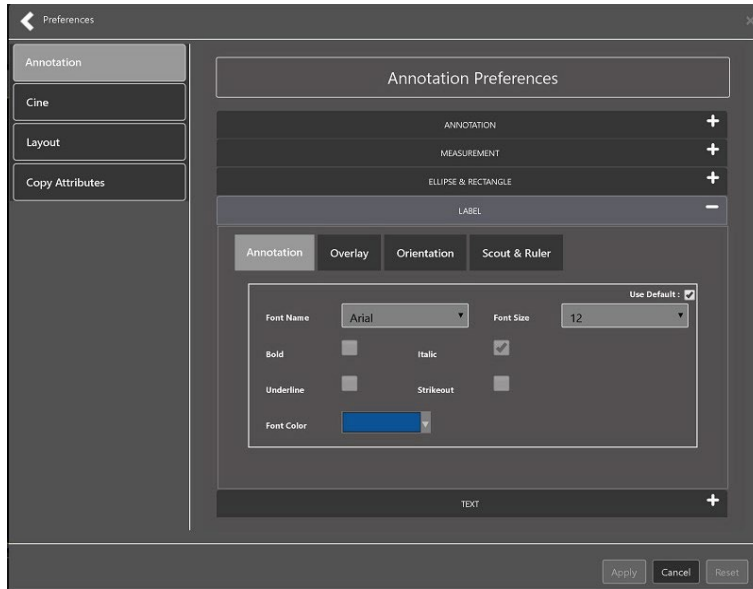
Click **Ellipse and Rectangle**, and the following screen displays (Figure 27).

Figure 27: Ellipse and Rectangle Preferences



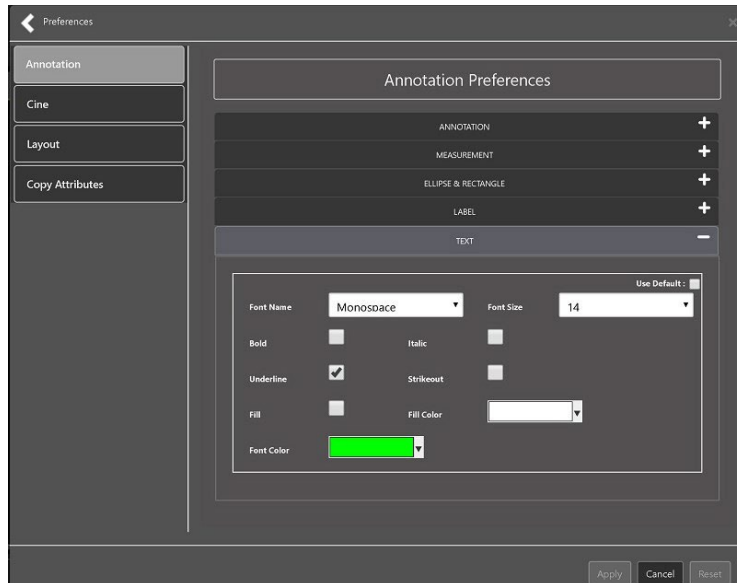
Click **Label**, and the following screen displays (Figure 28).

Figure 28: Label Preferences



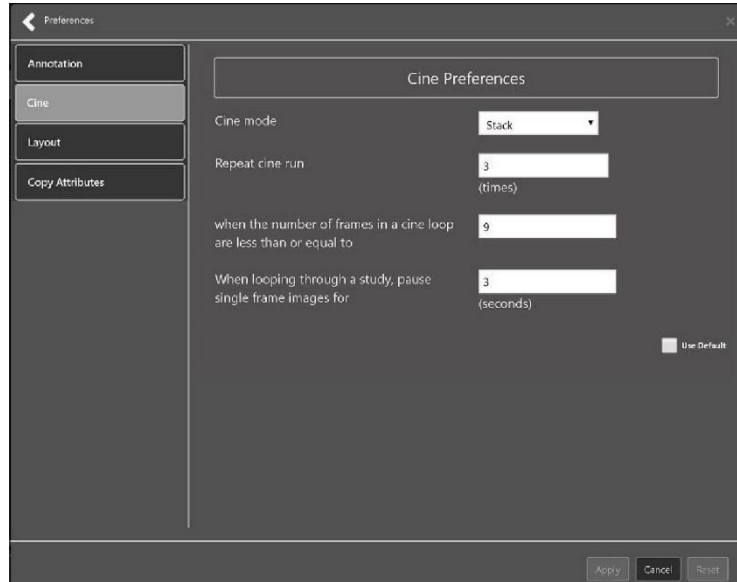
Under Label preferences, choose Annotation, Overlay, Orientation, or Scout & Ruler. Click **Text**, and the following screen displays (Figure 29).

Figure 29: Annotation Preferences



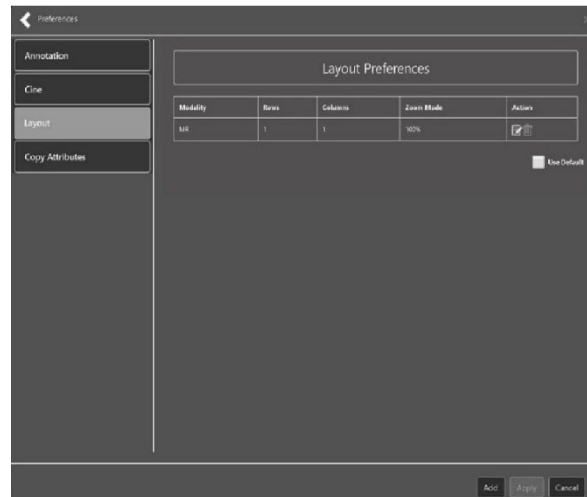
To view or update the Cine Settings, select the **Cine Preference** and the following screen displays (Figure 30).

Figure 30: Cine Preferences



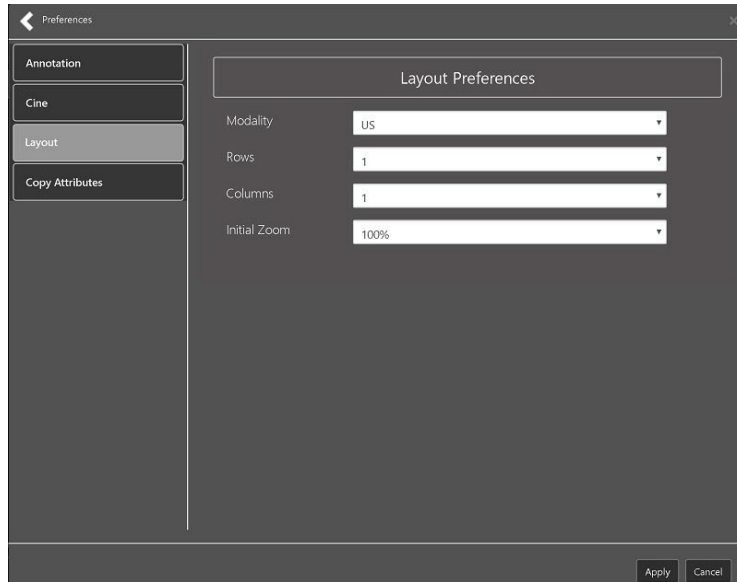
To view the Layout settings, select the **Layout Preference** to display the following screen (Figure 31).

Figure 31: Layout Preferences



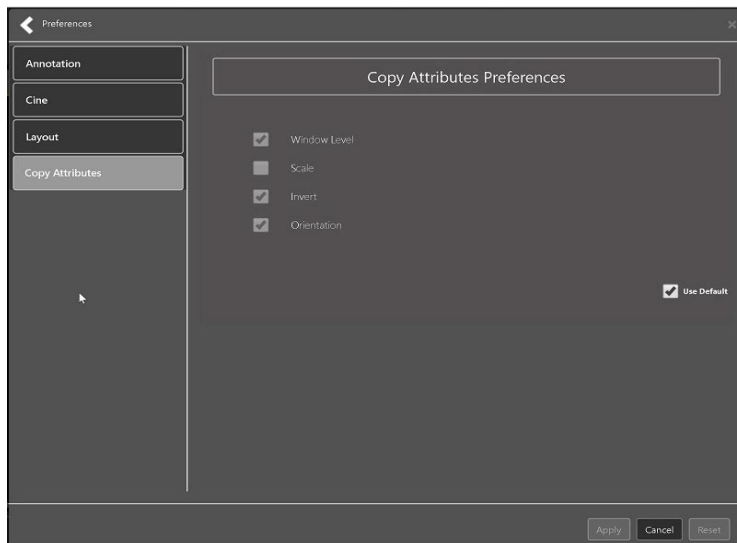
Click **Add** in the bottom right of the page to add a new layout preference (Figure 32).

Figure 32: Layout Preference Choices



To view the Copy Attributes settings, select the **Copy Attributes Preference**, and the following screen displays (Figure 33).

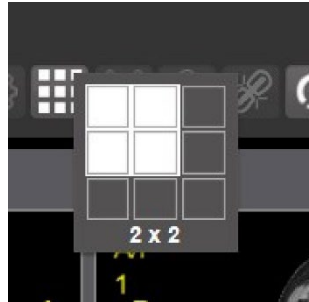
Figure 33: Copy Attributes Preferences



4.3.11. Changing the Study Layout

To change the study layout, select the **Study Layout Button**, and the following screen displays (Figure 34).

Figure 34: Layout Attribute Preference Choices



Select the **study level** that best suits your purpose.

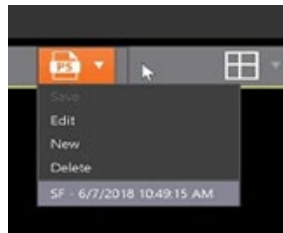
4.3.12. Presentation State

To view presentation state options, click the **PS Icon** (Figure 35), and the following menu appears (Figure 36).

Figure 35: Presentation State Button



Figure 36: Presentation State Menu



The presentation state icon is available only if there are presentation states associated with the study and there is an annotation drawn on the image. The bottom of the context menu displays all the saved presentation states associated with the study. To view additional information about a specific presentation state, hover over it in the context menu.

4.3.13. Using the Measurements Tools

To use the various measurement tools, select the **Measurements** button, and the following screens display depending on the option you choose (Figure 37, Figure 38, and Figure 39).

Figure 37: Measurement Tool View 1

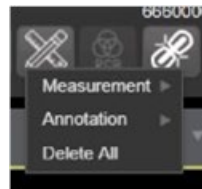


Figure 38: Measurement Tool View 2

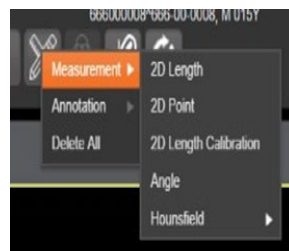
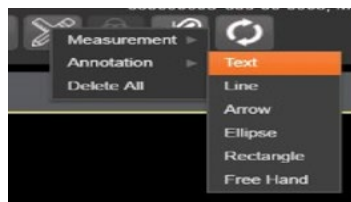


Figure 39: Measurement Tool View 3



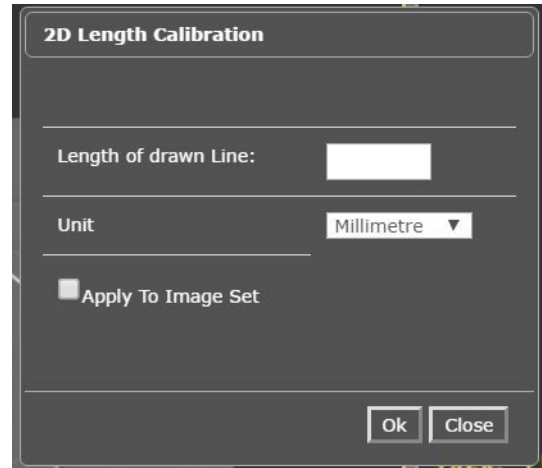
The **2D Length** option draws the necessary line(s) to obtain the desired measurements.

The **Angle Tool** draws the necessary line(s) to measure the desired angle.

The **2D Point** tool places the necessary dots to obtain the desired measurements. Use this option for ultrasound studies to measure velocity.

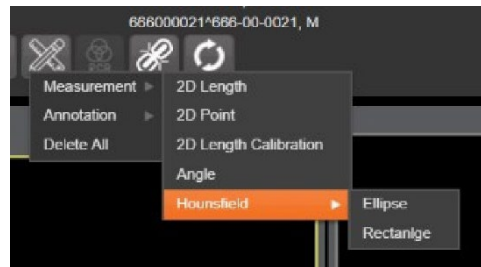
The **2D Length Calibration** option calibrates measurements to ensure accurate data. Images with DICOM info use the DICOM info to inform measurement calibration, but images without this data need calibration to show accurate data. See Figure 40 below.

Figure 40: 2D Length Calibration



The **Hounsfield** tool takes circular and rectangular density measurements. See Figure 41 below.

Figure 41: Hounsfield Measurement Tools



The **Text** tool creates text boxes on the image.

The **Line** tool draws straight lines on the image.

The **Arrow** tool draws straight arrows on the image.

The **Ellipse** tool draws ellipses on the image.

The **Rectangle** tool draws rectangles on the image.

The **Free Hand** tool connects points that you have specified to create any desired shape.

To delete all the measurements and markings you made on the current image, select the **Delete All** option.

4.3.14. Using the RGB Tool

The **RGB Tool** button filters the image for certain color channels to allow for various observations. When selected, a context menu (Figure 42) appears that allows you to select the desired color channel.

Figure 42: RGB Tool Button



4.3.15. Conditions for Image Viewer Functions

Table 5 describes the Viewer functions dependent on certain conditions.

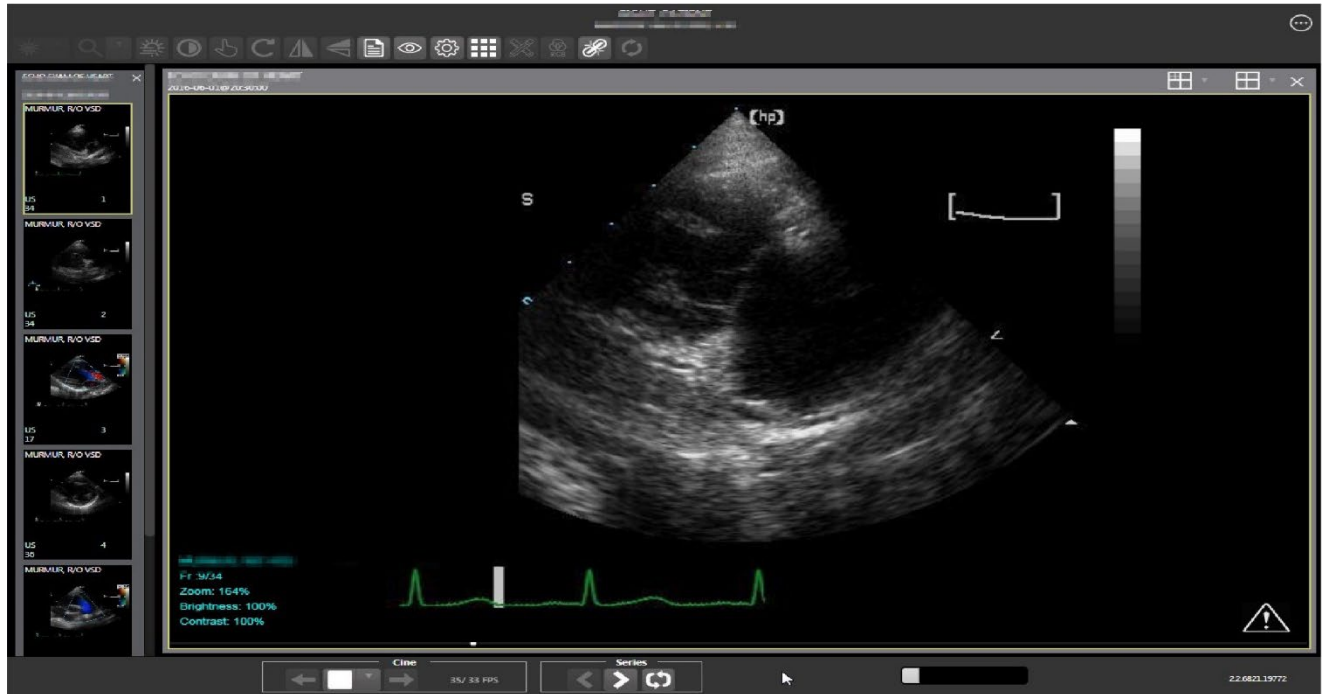
Table 5: Conditional Image Viewer Functions

Function	Section Reference	MAG Keys
Delete an image	Not applicable at this time	MAG DELETE or MAG SYSTEM
Edit an image	4.4.3	MAG EDIT, or MAG QA REVIEW, or MAG SYSTEM
Image navigation toolbar	4.2.2	Not applicable
Main toolbar buttons	4.2.1	Not applicable
Print and Export an image	4.3.6 and 4.3.7	For non-Claims users, their VistA account requires the MAG ROI or MAG SYSTEM keys to print and export an image. Claims users have special permission to print and export.
Status	4.3.3	Not applicable

4.4. Image Quality Assurance (QA)

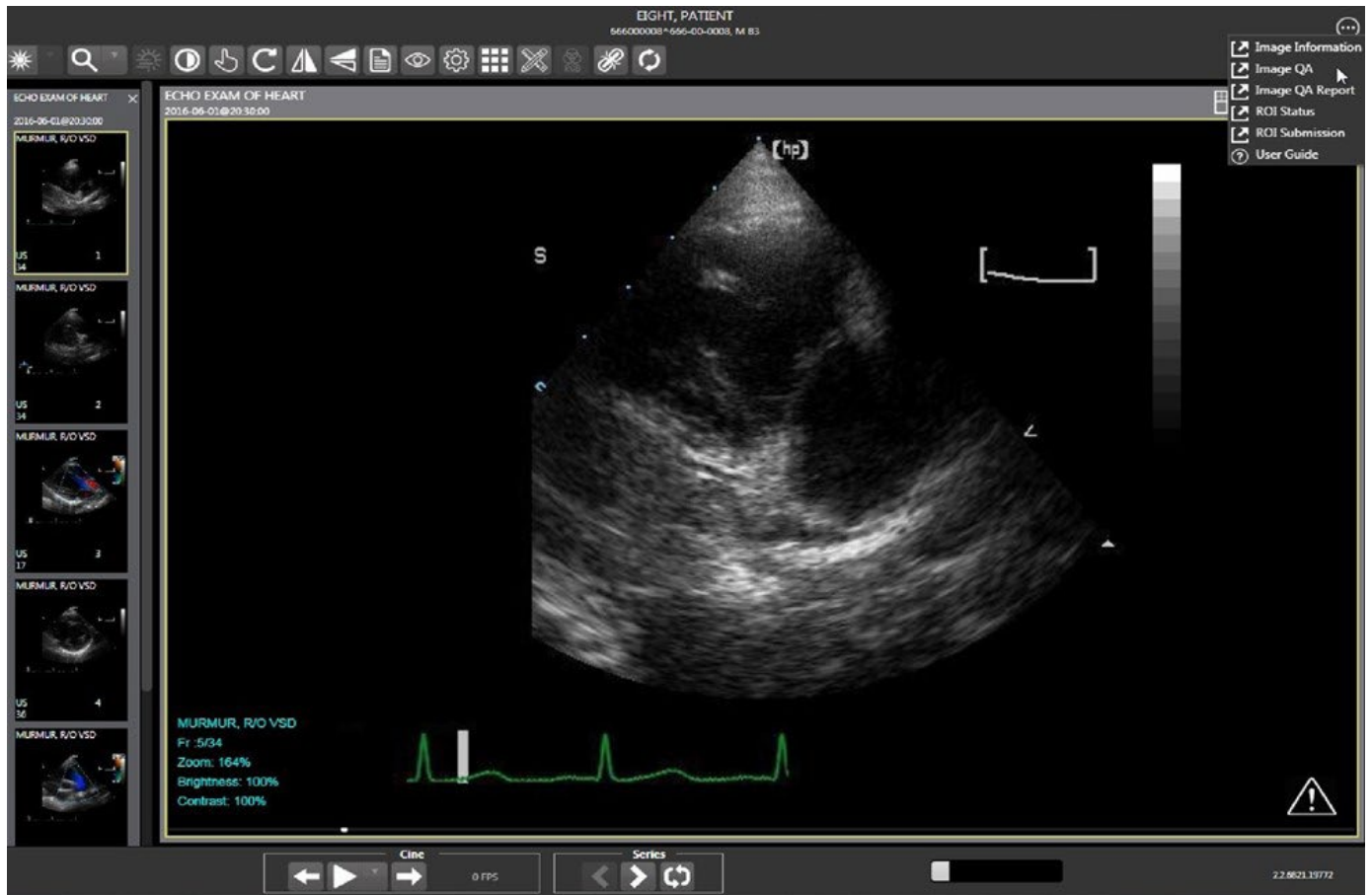
To use the image quality assurance features, load an image in the Viewer (Figure 43).

Figure 43: Main Viewer Page with Image Loaded



Click the **External Links** button on the Viewer page and a drop-down menu (Figure 44) appears.

Figure 44: External Links Menu on Main Viewer Page



4.4.1. Image Information

Select the **Image Information** link from the menu. The image information page (Figure 45) displays.

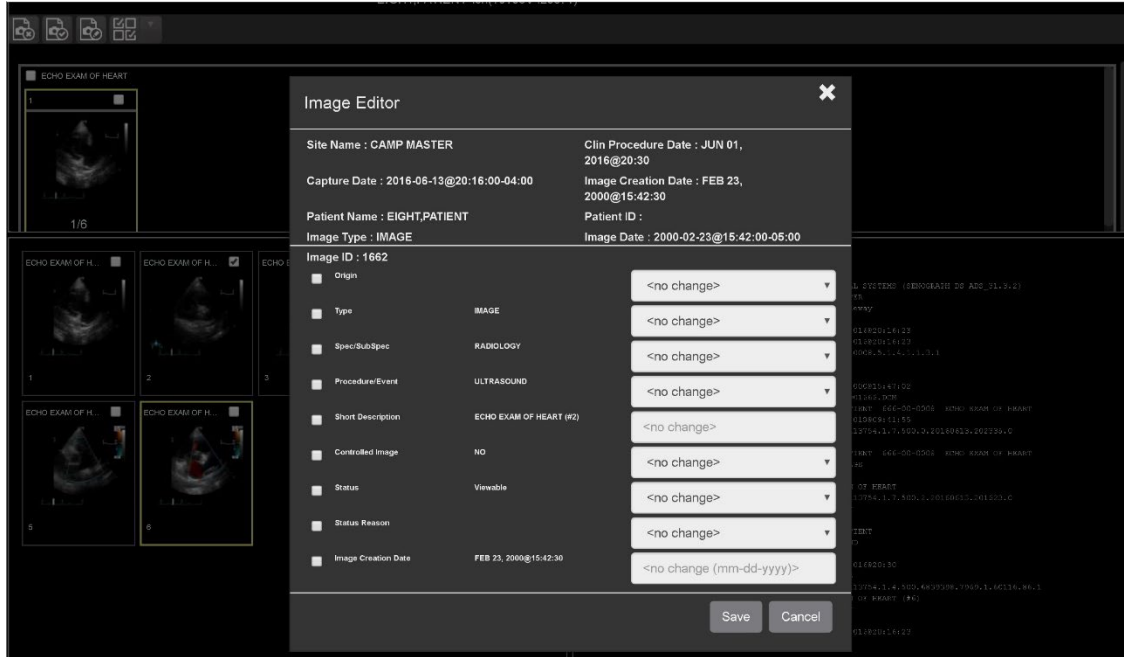
Figure 45: Image Information

The screenshot displays the 'Image Information' page for an 'ECHO EXAM OF HEART'. It features a grid of six echocardiogram images (labeled 1 through 6) and a detailed metadata table on the right side. The table lists various fields such as acquisition date, patient name, and exam details.

***** Fields for Image ID# 1668 *****		
ACQUISITION DEVICE	= (7)	= GE MEDICAL SYSTEMS (AECOM/BAH 00 Aca_31.3.2)
ACQUISITION DATE	= (150)	= 0407 080708
CAPTURE APPLICATION	= (20)	= ECHO Outstation
CLASS INDEX	= (1)	= CLIN
CONTROLLED DATE	= (3160615,2016023)	= JUN 23, 2016020416023
DATA/TIME IMAGE SAVED	= (3160615,2016023)	= JUN 23, 2016020416023
DCOM SOP CLASS	= (10)	= 1.2.840.10009.5.1.4.1.1.3.1
DIRS & VOLUME, ABRSTRACT	= (2)	= NONE
DIRS & VOLUME, MAGNETIC	= (2)	= NONE
DOCUMENT DATE	= (3000225,154702)	= FEB 23, 2000015147102
FILENAME	= (1668)	= ECHO000001668.DCM
GROUP PREFIX	= (1668)	= ECHO000001668-00-0000 ECHO EXAM OF HEART
LAST DICOM DATE	= (3101116,094355)	= NOV 14, 2014090941155
NEW SOP INSTANCE UID	= (1,2,840,113154,1,7,500,0,2016015,202335,0)	= 1.2.840.113154.1.7.500.0.2016015.202335.0
MODAL	= (1668)	= ECHO
MODAL CODE	= (100)	= ECHO, FOTIMPT 644-00-0100 ECHO EXAM OF HEART
PACKAGE INDEX	= (738)	= ECHO EXAM OF HEART
PACS PROPERTIES	= (738)	= 1.2.840.113154.1.7.500.2.2016015.201623,0
PACS UID	= (738)	= ECHO EXAM OF HEART
PARROP DATA FILES	= (741)	= ECHODICOMPT
PATIENT ORIGINAL FOOT ID	= (13)	= 722
PATIENT	= (13)	= ECHOT, PATIENT
PACS/EVENT INDEX	= (100)	= ULTRASOUND
PROCEDURE	= (16)	= ECHO EXAM OF HEART (E)
PROCEDURE EXAM DATE/TIME	= (3160601,202)	= JUN 01, 2016010130
RADIOLOGY REPORT	= (722)	= 040216-88
SERIES UID	= (1,2,840,113154,1,9,500,4839396,1369,1,40116,86,1)	= 1.2.840.113154.1.9.500.4839396.1369.1.40116.86.1
SOP CLASS	= (10)	= ECHO EXAM OF HEART (E)
STATUS	= (11)	= UNACQUIRED
STATUS DATE	= (3160615,2016023)	= JUN 23, 2016020416023
TYPE INDEX	= (75)	= IMAGE

Select any image, then click the **Image Edit** main toolbar button. The image editor dialog (Figure 46) opens. To edit a field, click on the **checkbox** to the left to enable the dropdown control or the textbox. Click **Save** to save the image index fields.

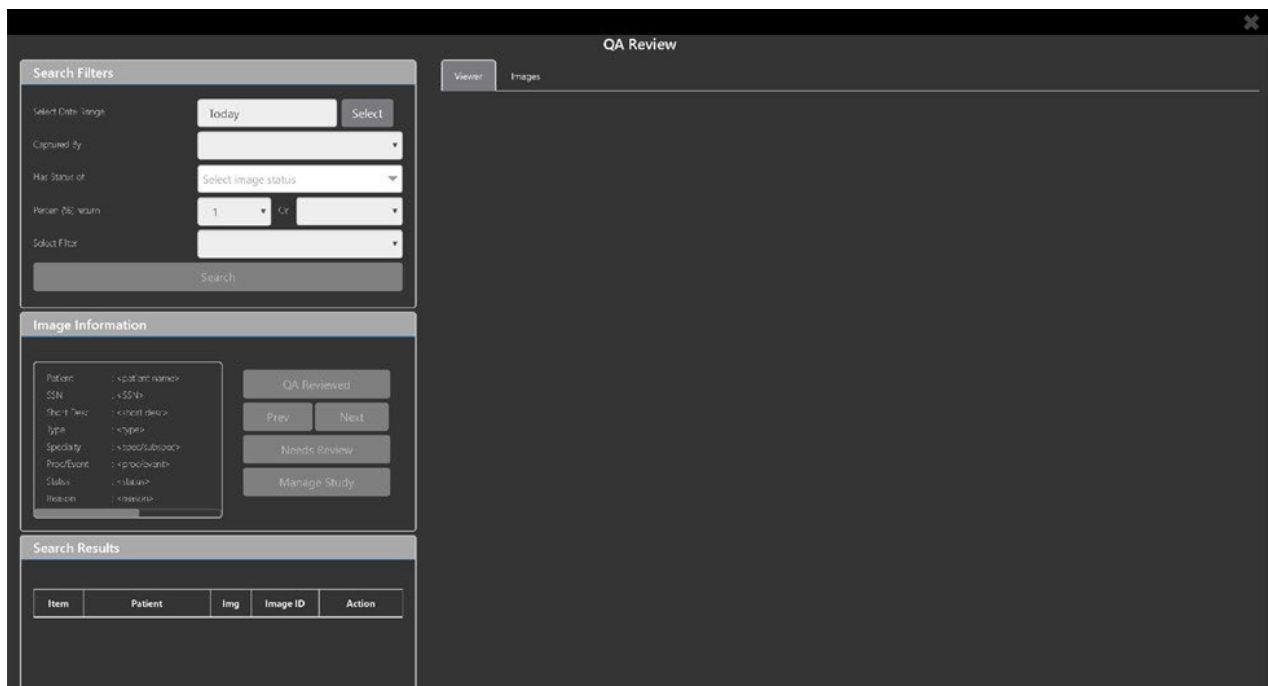
Figure 46: Image Editor



4.4.2. Image QA

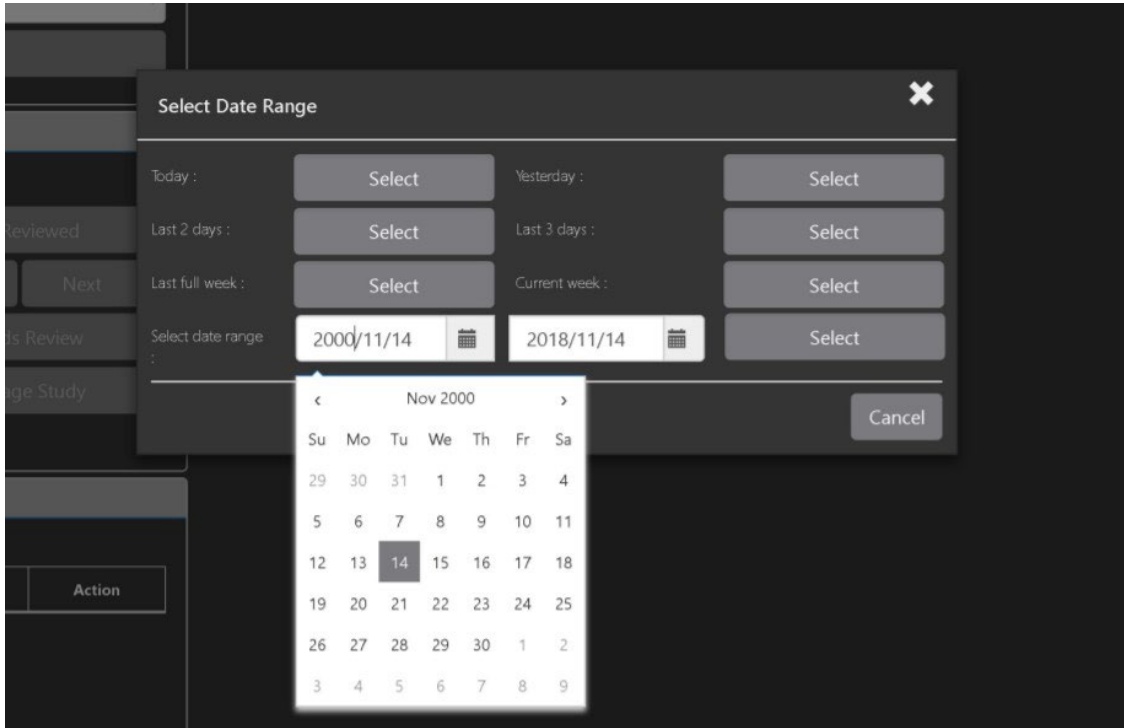
Select **Image QA** from the **External Links** menu to open the QA review page (Figure 47).

Figure 47: QA Review Page



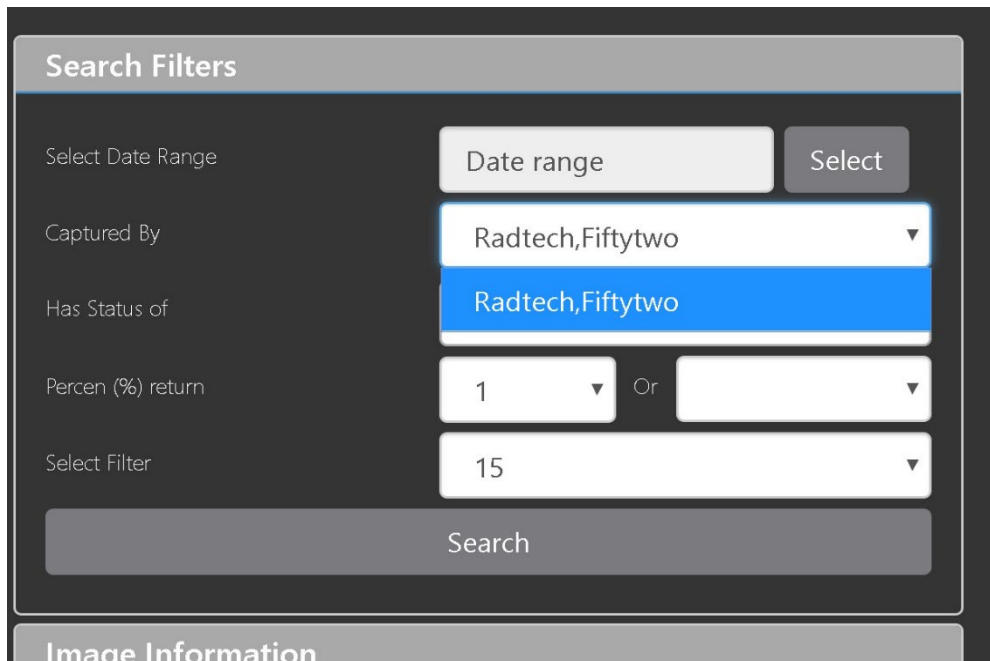
Click the **Select** button from the **Search Filters** group to open the **Select Date Range** pop-up (Figure 48). Select a date range.

Figure 48: QA Filters and Date Range



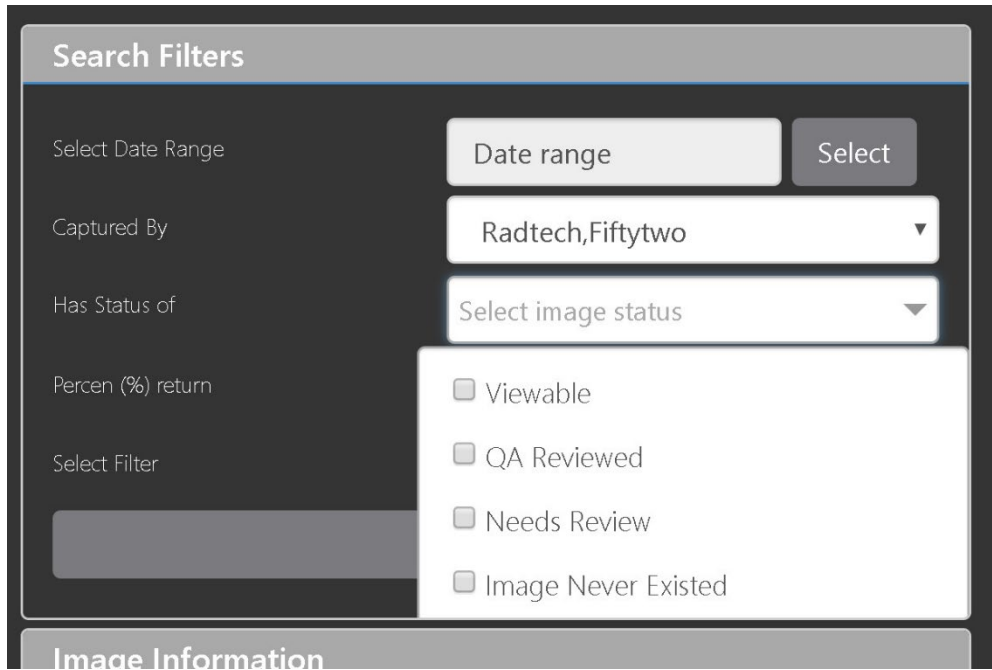
The **Captured By** dropdown populates with a list of valid users for the date range (Figure 49).

Figure 49: Search Filter Details



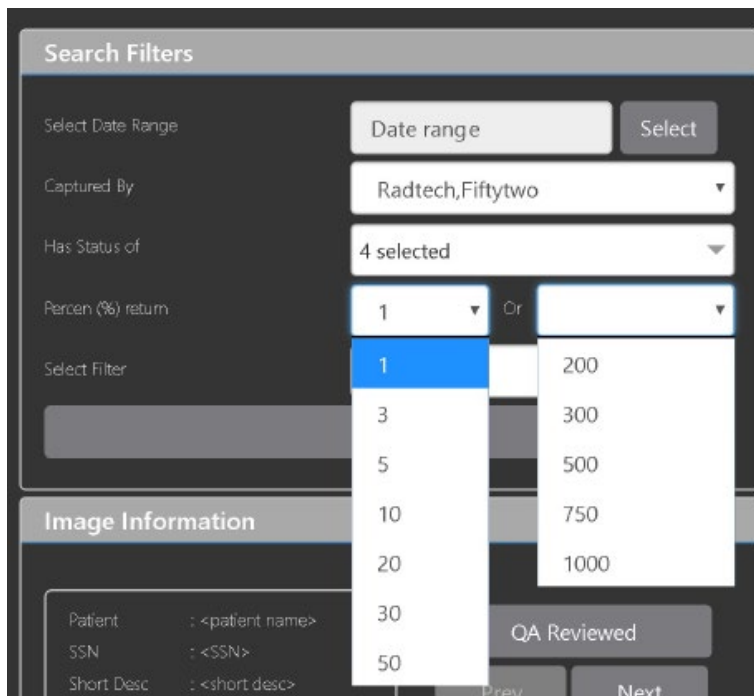
Click the **Has Status of** dropdown, and choose one or more images to choose the status (Figure 50).

Figure 50: QA Status Choices



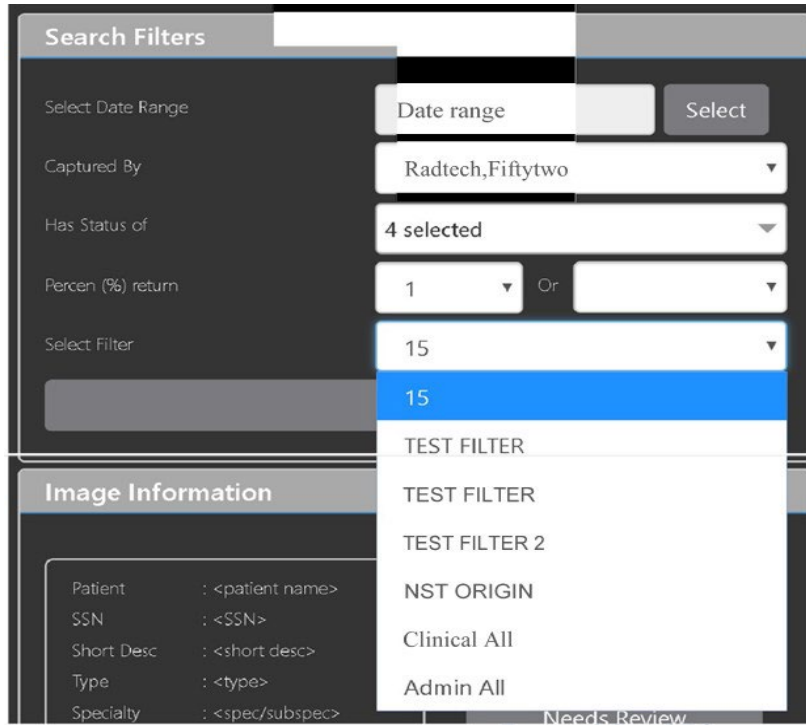
Restrict the study count in the search results using the % **return** dropdowns (Figure 51). The left dropdown is in the percentage of study items to display. The right dropdown is the maximum number of items to display.

Figure 51: Percentage of Images to Display



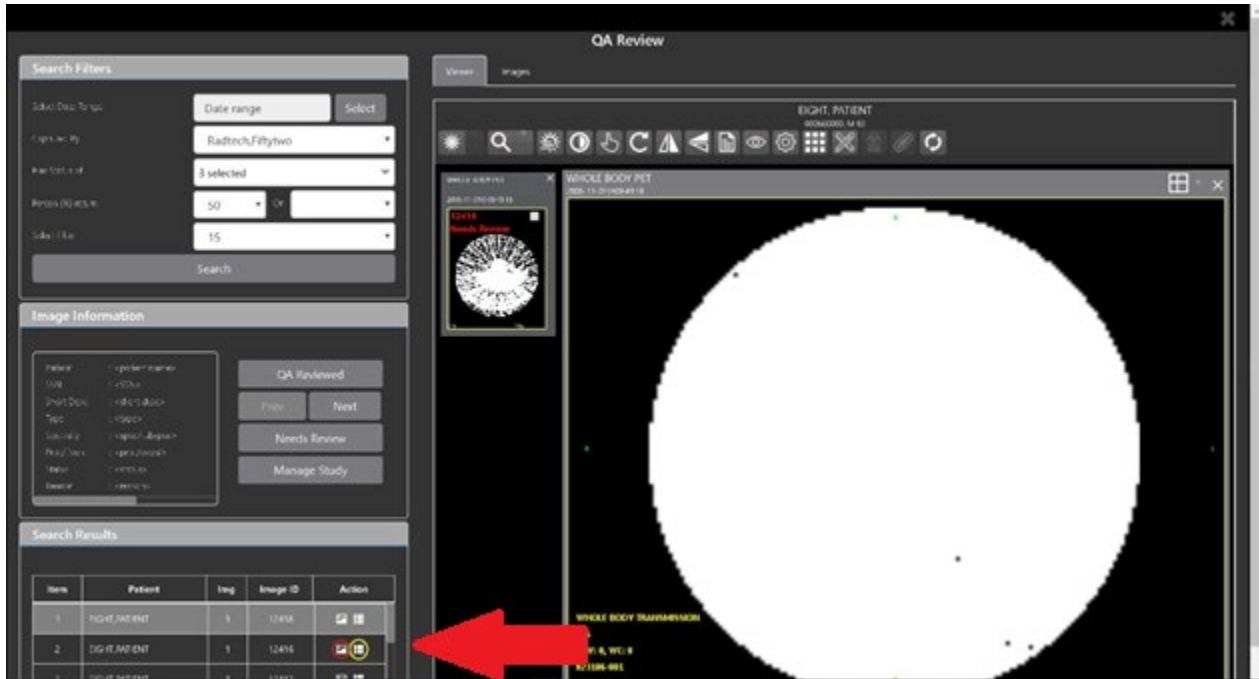
Choose a filter using the **Select Filter** dropdown (Figure 52).

Figure 52: Saved Filters



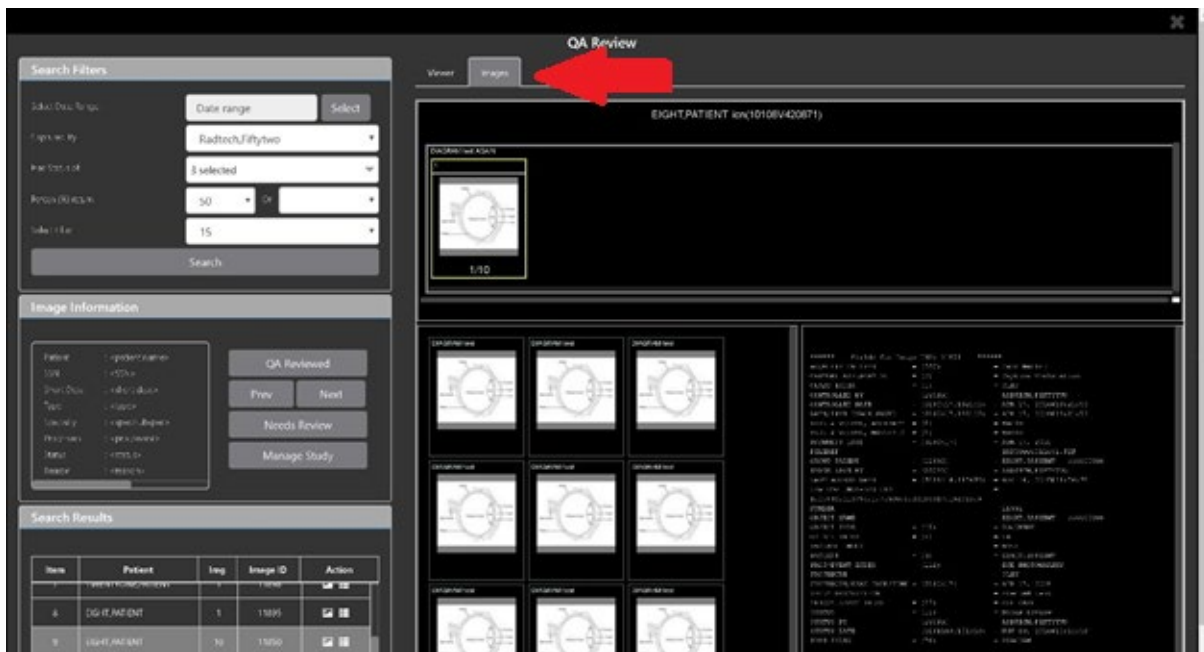
Click **Search** to search for studies. The first study in the list of studies found displays automatically on the right. Click on the **Viewer** icon (circled in red, Figure 53) to display the study. Click on the **Images** icon (circled in yellow, Figure 53) to display the images tab for the study.

Figure 53: QA Filter Results



You can click on the **Images** tab at the top after displaying the study (Figure 54).

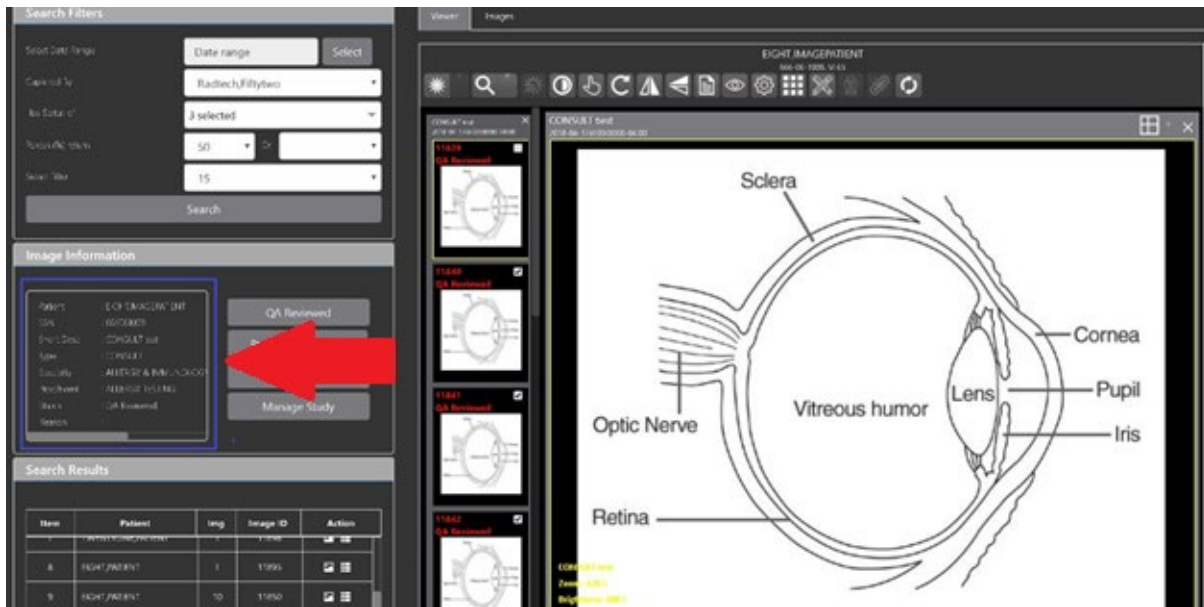
Figure 54: QA Filter Results and Image Information



4.4.3. Viewing and Setting Image Status

Click on a thumbnail. Its image information, including the view status, displays in a panel on the left (highlighted in blue, Figure 55).

Figure 55: QA Thumbnail

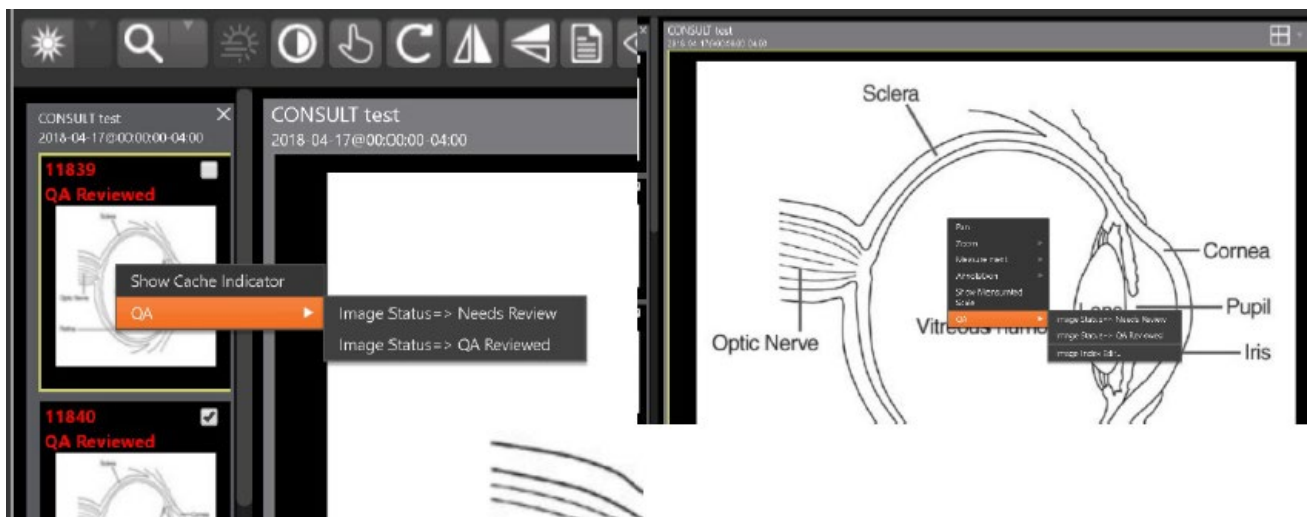


Click on an **image thumbnail** to display the corresponding image. More than one thumbnail can be selected using the shift key.

NOTE: The user's VISTA account requires the MAG EDIT or MAG QA REVIEW keys to edit/set this information.

Click the **QA Reviewed** or **Needs Review** button to set the corresponding image status. You can also right-click on the image or the image thumbnail to set the image status (Figure 56).

Figure 56: QA Review Status Update Menus



You can invoke the Image Index Editor page by clicking on the **Image Index Edit** menu item.

Use the **Prev** and **Next** buttons to traverse the search results.

Click the **Manage Study** button to display the **Images** tab for the study.

4.4.4. Image QA Report

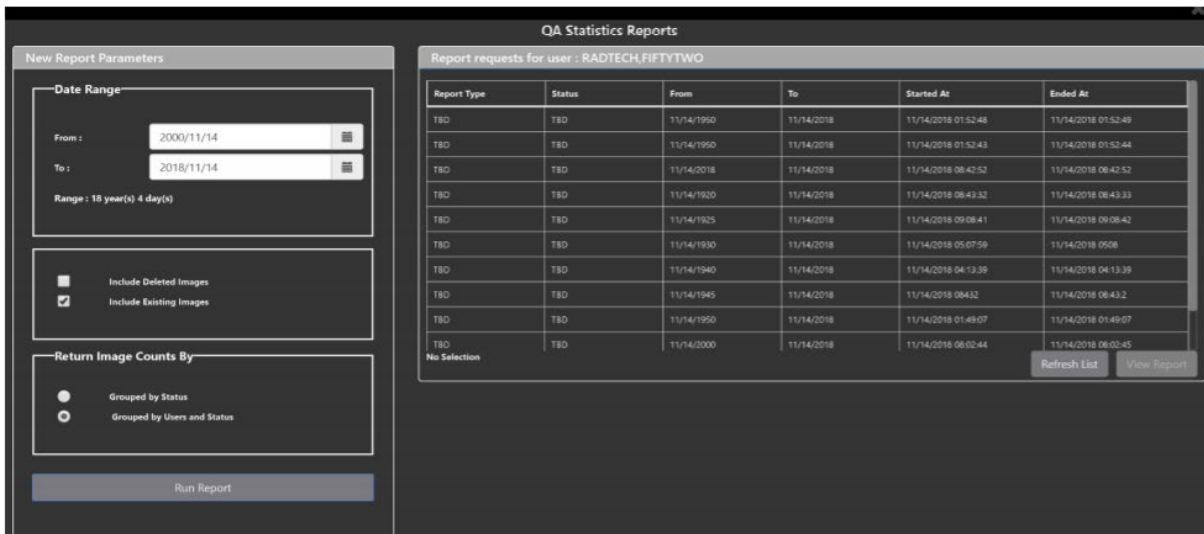
Select the **Image QA report** from the Viewer page's **External Links** menu to open the QA Statistics Reports page (Figure 57).

Figure 57: QA Statistics Reports Page

The screenshot displays the 'QA Statistics Reports' interface. On the left, the 'New Report Parameters' panel includes a 'Date Range' section with 'From' and 'To' date pickers set to 09/07/2018, and a 'Range: Today' option. Below this are checkboxes for 'Include Deleted Images' (unchecked) and 'Include Existing Images' (checked). The 'Return Image Counts By' section has radio buttons for 'Grouped by Status' (selected) and 'Grouped by Users and Status'. A 'Run Report' button is at the bottom of this panel. The right panel, titled 'Report requests for user : RADTECH,FIFTYTWO', features a table with columns: Report Type, Status, From, To, Started At, and Ended At. The table is currently empty, showing 'No Selection'. 'Refresh List' and 'View Report' buttons are located to the right of the table.

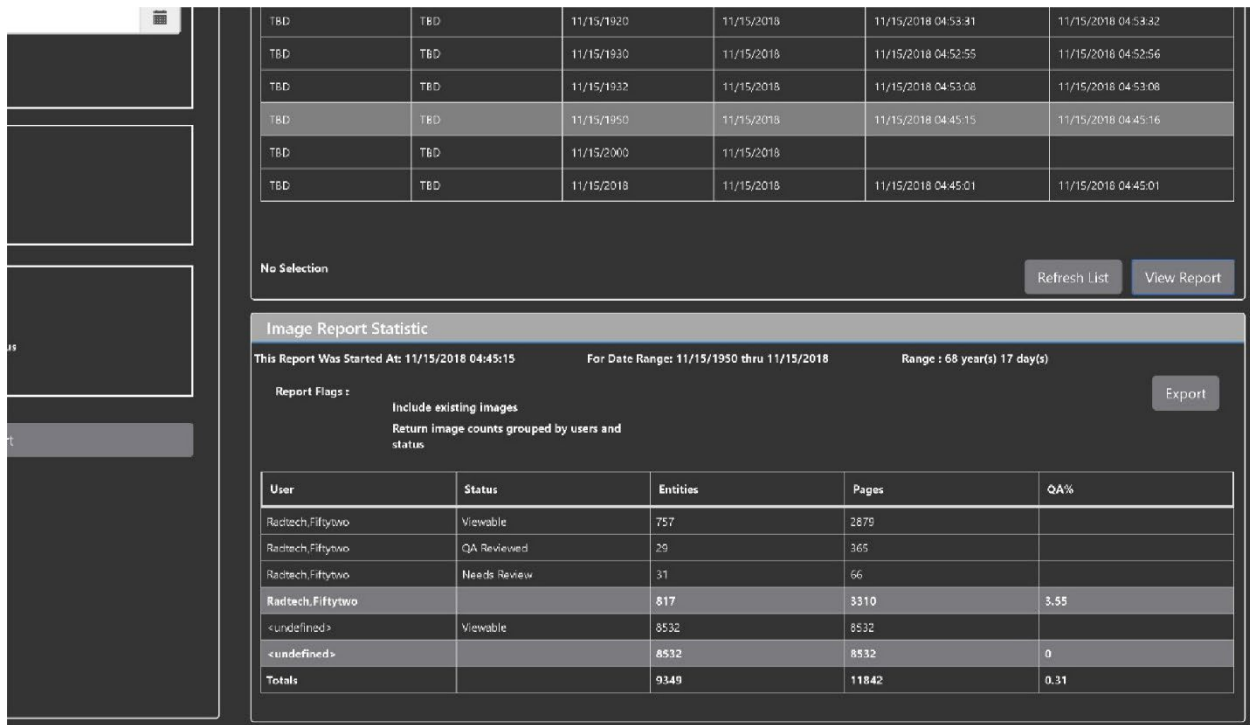
Fill in the report parameters fields and click the **Run Report** button (Figure 58).

Figure 58: Run QA Report



Select any item, and click **View Report** button, then the selected image report statistics load (Figure 59).

Figure 59: View QA Report

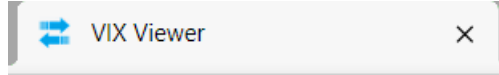


Click **Export** to generate a .csv file using the results.

4.5. Closing the Viewer

To close the Viewer page, click the "X" on the browser tab. See Figure 60 below.

Figure 60: Viewer Close Button



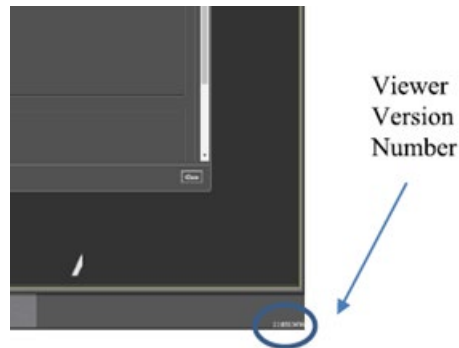
NOTE: Depending on the hosting application, the Viewer page might automatically close when you select a different patient.

5. Troubleshooting

The **View Image Info** main toolbar button can offer data to help you troubleshoot. See Section 4.3.9 for more information.

To display version information and message history about the Viewer, first click the **Viewer Version Number** located in the lower right corner of the Viewer main page (Figure 61).

Figure 61: Viewer Version Number



In the Viewer Information dialog (Figure 62) that opens, click on **Version History** to display version release information or click on **Message History** to display message history items.

Figure 62: Viewer Information Dialog



If encountering issues, clear the cache in the web browser for the Viewer, and refresh the page.

5.1. Special Instructions for Error Correction

Please refer to the VIX Overview - View Image Viewer – Troubleshooting Section in [MAG3_0P329_VIX_ADMIN_GUIDE.PDF](#).

6. Acronyms and Abbreviations

Acronym/Term	Definition
Cache	A temporary storage place allowing faster access to data.
CD	Compact Disc
CPRS	Computerized Patient Record System
CT	Computerized Tomography
CVIX	Central Vista Imaging Exchange
DICOM	Digital Imaging and Communications in Medicine
DoD	Department of Defense
Viewer	Enhanced Image Viewer
FDA	Food and Drug Administration
JLV	Joint Legacy Viewer
JPEG	Joint Photographic Experts Group
OIT	Office of Information and Technology
PACS	Picture Archiving and Communication System
PDF	Portable Document Format
QA	Quality Assurance
RGB	Red Green Blue
ROI	Release of Information
TIFF	Tag Image File Format
VA	Department of Veteran Affairs
VistA	Veterans Health Information System and Technology Architecture
VIX	VistA Imaging Exchange Services
WW/WC	Window Level