



VistARad Diagnostic Workstation User Guide

VistA Imaging Version 3.0
March 2002



VISTA Imaging Software Design & Development
Veterans Health Administration
Department of Veterans Affairs

**VistARad User Guide
Vista Imaging V. 3.0
March 2002**

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Preface

This manual describes the functions of the VistARad workstation software, which is used for primary interpretation of radiological images. This manual was created and is maintained by the Washington OI VistA Imaging Systems Design & Development group.

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Introduction

This manual explains how to use the VistARad diagnostic workstation, a part of the **VISTA** (Veterans' Hospital Information System Technology and Architecture) Imaging system.

This manual is intended for radiologists and clinicians. This manual assumes that the user is familiar with the Microsoft Windows™ environment.

Terms of Use

The use of the VistARad diagnostic workstation 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.
-  No modifications may be made to the VistARad diagnostic workstation without the express written consent of the **VISTA** Imaging National Project Manager.
-  The Food and Drug Administration classifies the VistARad software as a medical device. Modifications to the VistARad diagnostic workstation, such as the installation of unapproved software, will adulterate the medical device. The use of an adulterated medical device violates US federal law (21CFR820).

About this Manual

Contents in Brief

This manual contains the following chapters. To find information about a particular tool or feature, refer to the [Index](#).

- The [VistARad Overview](#) chapter describes VistARad and contains the basic information you need to begin using VistARad.
- The [Opening Exams & Reports](#) chapter explains how to use the Manager.
- The [Evaluating Exams—Layout](#) Viewer chapter explains how to use the Layout Viewer.
- The [Evaluating Exams—Stack Viewer](#) chapter explains how to use the Stack Viewer.
- The [Closing Exams & Updating Exam Status](#) chapter explains how to close open exams and how to indicate that they have been interpreted.

- The [Customizing VistARad](#) chapter describes the ways you can modify VistARad to match the way you work.
- The [Troubleshooting](#) chapter provides troubleshooting information.
- The [Glossary](#) defines terms used in this manual.
- [Appendix A: VistARad's Place in Imaging](#) describes the relationship VistARad has with other components in VISTA Imaging.
- [Appendix B: Keyboard Shortcuts](#) lists keyboard shortcuts available in VistARad.

Conventions

This manual uses the following conventions:

- Useful or supplementary information is indicated by: 
- Important or required information is indicated by: 
- Controls (buttons, boxes, etc.) in the user interface are indicated by initial capitalization. For example: Click Print to open the Print dialog.

When this manual describes actions performed with the mouse, the following terms are used.

| Term | Definition |
|--------------|--|
| Pointer | The onscreen symbol used to indicate the position of the mouse. Usually, the mouse pointer appears as  . Changes in pointer appearance are noted where appropriate in this manual. |
| Point | To point, move the mouse until the pointer is over the appropriate location on the screen. |
| Click | To click, press and quickly release a mouse button. When no button is specified, the left (or primary select) button is assumed. If a button other than the left mouse button should be used, the appropriate button will be indicated. For example: <ul style="list-style-type: none">• <i>Click the image.</i> (Point to the image, then press and release the left mouse button.)• <i>Right-click the image</i> (Point to the image, then press and release the right mouse button.) |
| Double-click | To double-click, press and release a mouse button twice in rapid succession. |
| Drag | To drag, move the mouse while pressing down a mouse button. |
| Scroll | If your mouse uses a scroll wheel instead of a middle button, scroll forward by rolling the wheel up (away from you), or scroll backward by rolling the wheel down (towards you). The direction you should scroll will be noted where appropriate. |

Using this Manual Online

This manual can be viewed online using Adobe Reader 5.0. To display this manual online, go to the Help menu in either the Layout Viewer and the Manager, and click Using VistARad or VistARad Manager Help.

- Links are indicated by underlined text. Clicking the link will take you to the indicated section or page.
- In the headers and footers, links to the next page (▶), previous page (◀), or previous view ([Back](#)) are also available.
- To quickly move to any point in the document, click the bookmarks shown on the left side of the Reader window. A bookmark that “contains” other bookmarks can also be expanded or collapsed by clicking the or box next to each bookmark.

For additional information about using Acrobat Reader, refer to the Acrobat Reader help file.

Related Manuals

In addition to this document, the following VistARad-related documents are available:

- VistA Imaging System 3.0 Release Notes
- VistA Imaging System 3.0 Installation Guide
- VistA Imaging System 3.0 Technical Manual
- VistA Imaging System Planning Document and Approved Equipment List
- VistA Imaging home page (<http://vaww.va.gov/imaging/>)

Getting Help

If you encounter any problems using VistARad, contact your local Imaging Coordinator or support staff. If the problem cannot be resolved locally:

- Use NOIS (the National Online Information Sharing system) to place a service request.
- Contact the National Help Desk between 8:00AM and 6:00PM Eastern time, Monday through Friday, at 1-888-596-4257.

Urgent after-hours service requests can be directed to the Compaq Expertise Center at 1-800-299-7282.

VistARad Overview

This chapter provides a general overview of VistARad and explains basic aspects of its use. It covers the following topics:

- [VistARad Explained](#)
- [Quick Start](#)

VistARad Explained

The VistARad diagnostic workstation is used by radiologists for the interpretation of digital images acquired by CR, CT, MRI, and other modalities. Using VistARad, you can locate and display current exams, prior (comparison) exams, and text-based reports.

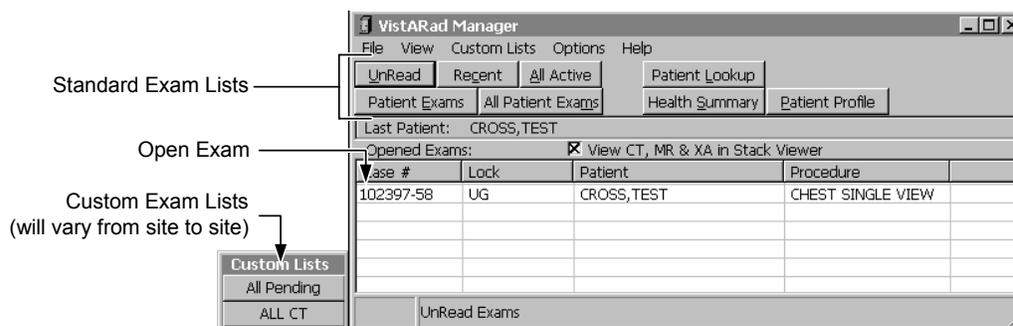
VistARad's functions are divided between several windows that appear on the workstation: the Manager, the Layout Viewer, and the Stack Viewer.

- The Manager is used to access radiology or nuclear medicine exams and reports. It also updates the VISTA Hospital Information System when an exam is locked or interpreted.
- The Layout Viewer is used to view and manipulate images in displayed exams.
- The Stack Viewer provides specialized display functions for CT, MR, and XA exams.

VistARad software is typically installed on a Windows NT-based computer with one, two, or four high-resolution grayscale monitors. Low-resolution monitors can also be used for non-diagnostic image review.

The Manager

The Manager is used to select the exams and reports you want to display. The Manager main window, shown below, provides access to exam lists and displays information about currently loaded exams. Exam lists are described in detail in on page [11](#).



The Layout Viewer

The Layout Viewer is used to display and manipulate images after an exam has been opened. The Layout Viewer main window contains a **menu bar**, a **toolbar**, and a display area. The menu bar provides access to all of the Layout Viewer's features. However, most of the features you typically use can be accessed from the toolbar (also referred to as the button bar), or by right-clicking an image and using a shortcut menu.



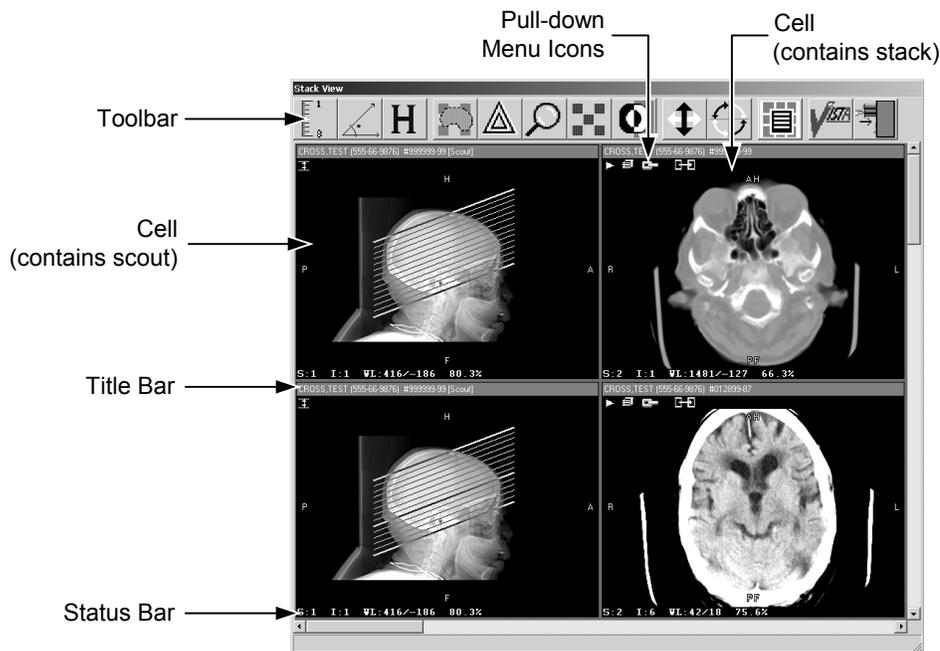
The display area in the Layout Viewer window is divided into one or more **group windows**. Typically, a group window will contain an entire exam. The title bar in each group window includes information that identifies the patient, case, acquisition date, and series (if necessary) of the exam.

Each image in a group window is shown in an **image frame**. The number of frames in a group window is determined by the current layout. An image frame is not highlighted unless the image it contains is selected (by clicking the image with the mouse). Information about the currently selected image is shown in the **status bar** at the bottom of the Layout Viewer window.

Each image frame usually contains a **text overlay** as well as an image. An overlay typically contains the patient name, exam or image acquisition date, and the image number. Overlays are modality-specific.

The Stack Viewer

The Stack Viewer is used to display CT, MR and XA exams. The Stack Viewer main window contains a **toolbar** similar to the one used in the Layout Viewer, and a display area divided into rows and columns of **cells**.



Cells can contain either a scout (localizer) image or a **stack** of cross-sectional images. In a stack, only one image is visible at a time. Other images in the stack can be displayed using the mouse or the cine tool. Typically, each stack contains a single series.

Each occupied cell contains a **title bar** that identifies the exam and patient, and a **status bar** that shows the series number and information about the currently displayed image. Functions specific to scout images or stacks can be accessed using **pull-down menus**, which are opened by clicking and dragging the icons in the upper left corner of each cell.

Quick Start

This section provides the basic information need to start, use, and exit VistARad. It covers the following topics:

- [Logging In and Starting VistARad](#)
- [Using VistARad](#)
- [Getting Around](#)
- [Exiting VistARad](#)

Logging In and Starting VistARad

This section explains how to log in and start VistARad. These steps assume that your computer is turned on and that you have logged in as a Windows NT user.

-  At some consolidation sites, VistARad may be set up to use site-specific shortcuts that allow you to log in without using the Connect To or Select Division boxes. If this is the case, you can use the standard login steps below.

Most sites will be able to use the steps below. Steps for logging in at consolidated sites are on the next page.

Logging into Standard Sites

To start VistARad

- 1 On the Windows desktop, double-click the VistARad shortcut.



If the VistARad shortcut is not available, you can also start VistARad from the Start Menu. To use the Start Menu, click  Start, located in the lower left corner of the leftmost monitor. Then point to Programs | VistA | Imaging | VistARad | VistARad.

- 2 When the VISTA Sign-on dialog displays, type your access code in the Access Code box. As a security measure, keystrokes will be displayed as asterisks (*).
- 3 Press the Tab key, then type your verify code in the Verify Code box. Keystrokes will be displayed as asterisks (*).
- 4 Press the Enter key or click OK. The Manager and the Layout Viewer windows will open.

-  If the Manager is obscured by the Layout Viewer, you can display the Manager by clicking the VISTA button , located on the Layout Viewer or Stack Viewer toolbars.

Logging into Consolidated Sites/Multiple Division Sites

Use the steps below if you are presented with a Connect To or Select Division box as you are logging in. Contact your Imaging Coordinator if you need to determine which server or division to select.

- i** You can log out of one site and into another without exiting VistARad. To do so, go to the Manager main window and click File, then click Logout. Then click File, Login.

To start VistARad

- 1** On the Windows desktop, double-click the VistARad shortcut.



If the VistARad shortcut is not available, you can also start VistARad from the Start Menu. To use the Start Menu, click  Start, located in the lower left corner of the leftmost monitor. Then point to Programs | Vista | Imaging | VistARad | VistARad.

- 2** If the Connect To box displays, click the down arrow, then click an option to select which **VISTA** system you want to connect to. Then click OK.
 - 3** When the VISTA Sign-on dialog displays, type your access code into the Access Code box. As a security measure, keystrokes will be displayed as asterisks (*).
 - 4** Press the Tab key, then type your verify code into the Verify Code box. Keystrokes will be displayed as asterisks (*).
 - 5** Press the Enter key or click OK.
 - 6** If the Select Division dialog displays, double-click the division that you will be interpreting exams for.
 - 7** Press the Enter key or click OK. The Manager and Layout Viewer windows will open.
- i** If the Manager is obscured by the Layout Viewer, you can display the Manager by clicking the **VISTA** button , located on the Layout Viewer or Stack Viewer toolbars.

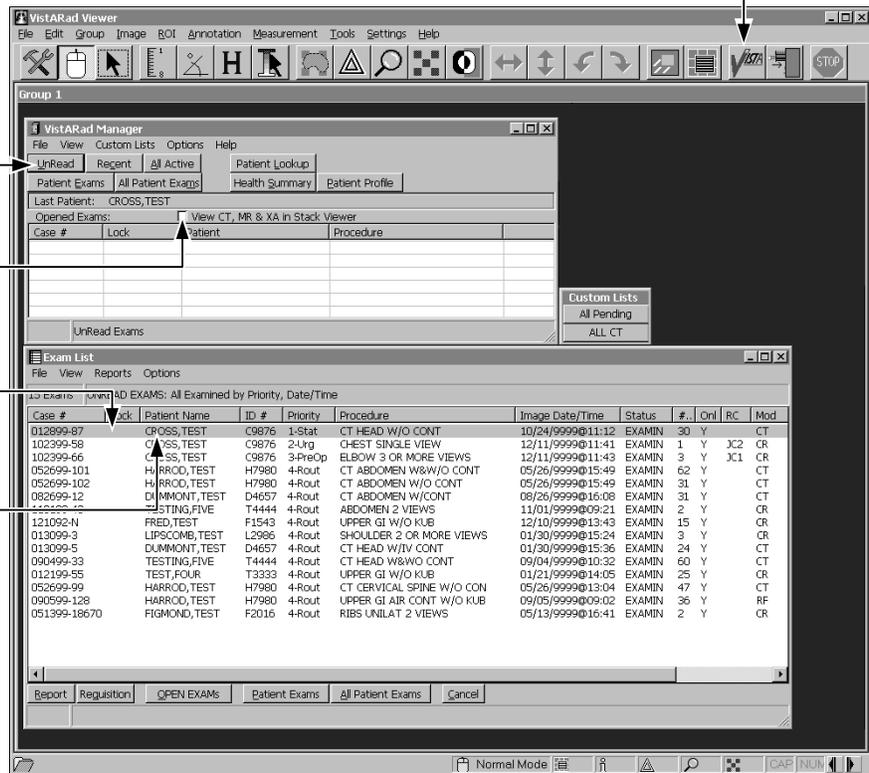
Using VistARad

This section explains the basic steps used to open, evaluate, and close an unread exam.

Step 1: Open an Unread Exam

Follow the steps indicated in the following figure to open an exam. Once an exam is opened, it will be displayed in either the Layout Viewer or the Stack Viewer.

1. If Manager is not visible, click to display Manager.
2. Click to open UnRead list.
3. If exam is CT, MR, or XA, click to open exam in Stack Viewer.
4. Locate exam, and verify that Lock field for exam is empty.
5. Double-click to open exam.



i To view a requisition for a selected exam, click Requisition, located near the bottom of the Exam List window.

Step 2 (Layout Viewer): Evaluate Images

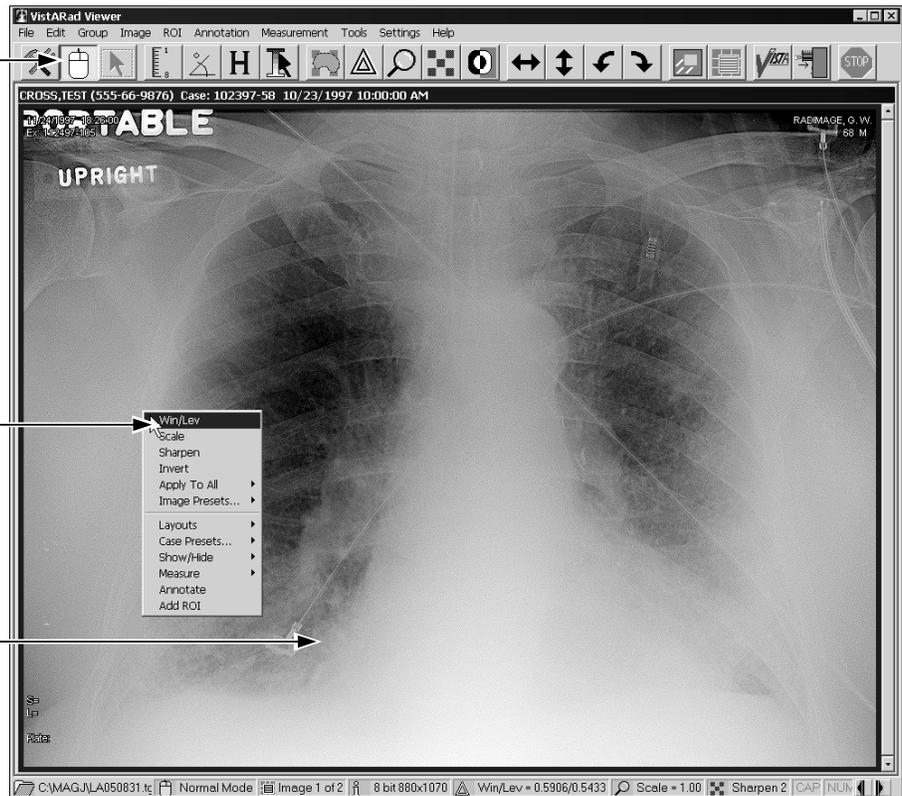
The figure below outlines the basic steps of adjusting images displayed in the Layout Viewer. For more information about working with images, see page [19](#).

1. Confirm that "Use Mouse" button is active (pressed in).

2. Right click on image. When shortcut menu opens, click Win/Lev, Scale, or Sharpen.

3. Drag mouse on image to make changes.

4. Right click once when finished.



- i** By default, dragging on an image using the right mouse button will change window/level. The action assigned to the right mouse button can be changed as described on page [68](#).

Step 2 (Stack Viewer): Evaluate Images

Once exams are opened in the Stack Viewer, images can be adjusted much as they would be in the Layout Viewer.

The figure below outlines the basic steps of displaying and adjusting images. For more detailed information about using the Stack Viewer, see page 47.

The screenshot shows the 'Stack View' window with a toolbar at the top containing icons for zoom, pan, and other navigation tools. The main area is divided into four quadrants, each displaying a different view of a CT scan: a sagittal scout view (top-left), an axial CT slice (top-right), another sagittal scout view (bottom-left), and an axial CT slice (bottom-right). Each image has a status bar below it showing technical details like 'S:1 I:1 WL: 416/-186 80.3%'.

Annotations on the left side of the image include:

- Use any of the following to display key images:**
 - > Click to start or stop cine tool. (Arrow pointing to the top-right image window)
 - > Click slice line to display image. (Arrow pointing to the slice line in the top-left image)
 - > Drag with middle mouse button to scroll. (Arrow pointing to the top-right image window)
- Adjust layout by dragging gridlines.** (Arrow pointing to the gridlines between the top and bottom image windows)
- Adjust images:**
 1. Right click image to open menu. (Arrow pointing to the bottom-right image window)
 2. Click W/L, Scale or Sharpen. (Arrow pointing to the context menu)
 3. After menu closes, drag to make changes. (Arrow pointing to the context menu)
 4. Right-click when finished. (Arrow pointing to the bottom-right image window)

A context menu is open over the bottom-right image window, listing options such as 'Window/Level', 'Scale', 'Sharpen', 'Invert', 'Image Presets', 'Show/Hide', 'Measure', 'Create Scout', 'Split Stack', 'Image Data', and 'ROI'.

Step 3: Update exam status

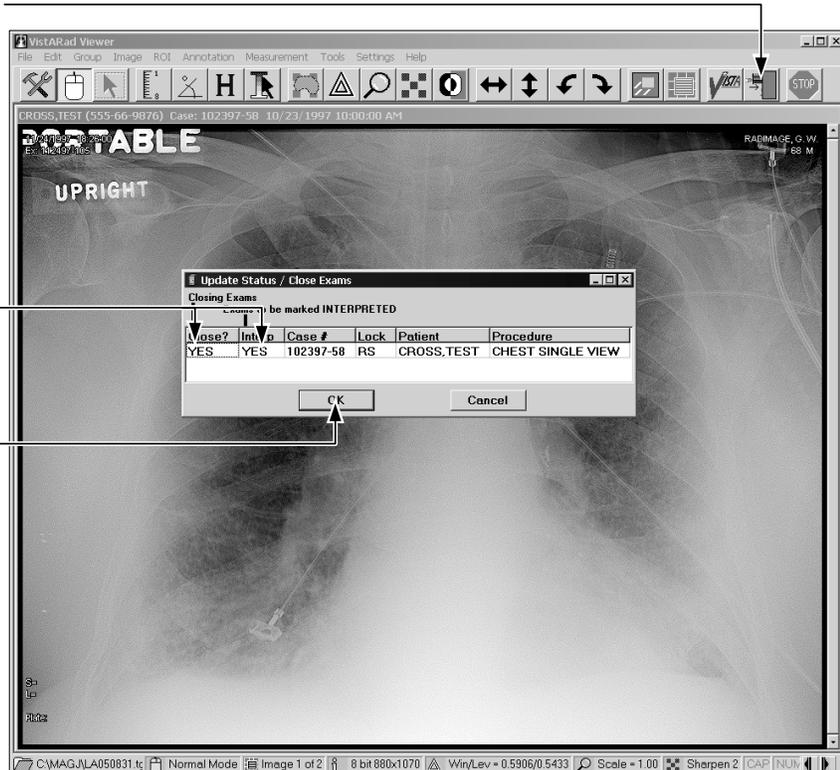
After reviewing an exam, use the steps below to close an exam and update its status to INTERPRETED.

i The Layout Viewer is shown below. These steps can also be used for the Stack Viewer.

1. Click to open Update Status/Close Exams window.

2. Verify values in Close and Interp fields. If necessary, click to change.

3. Click OK.



! Once an exam's status has been changed to INTERPRETED, the exam's status cannot be altered from VistARad. To return the exam to its original status, you will need to have a Radiology Package user delete the Interpreting Radiologist entry using the Examination Status Entry/Edit option.

Getting Around

When you open an exam, the Layout Viewer or the Stack Viewer will open automatically. If you need to switch back and forth between the Manager, the Layout Viewer, and the Stack Viewer, use the methods described in the following table.

To switch between VistARad components

| To display... | Do this... |
|--|--|
| The Manager | From the Layout Viewer or the Stack Viewer, go to the toolbar and click  . |
| The Layout Viewer | From the Manager, click any visible part of the Layout Viewer window. From the Stack Viewer, go to the toolbar and click  . |
| The Stack Viewer | From the Layout Viewer, go to the toolbar and click  . |
| The Update Status/ Close Exams window | From the Layout Viewer or the Stack Viewer, go to the toolbar and click  . |

Exiting VistARad

To exit VistARad, go to the menu bar in the Manager or the Layout Viewer, click File, then click Exit.

- When you exit VistARad, you will also be automatically logged out of the *VISTA* system.
- If you try to exit VistARad while exams are displayed, the Update Status/Close Exams window will open. Before VistARad shuts down, you will need to close each exam listed in the window.

 For unread exams, the Close and Interp fields in the Update Status/ Close Exams window default to YES. To close an unread exam without updating its status, ensure that the Interp field is set to NO (field values can be changed by clicking them with the mouse).

Opening Exams & Reports

This chapter describes how the Manager is used to open exams and display patient reports. It covers the following topics:

- [Exam Lists Explained](#)
- [Opening Exams](#)
- [Working with Requisitions and Reports](#)

Exam Lists Explained

This section explains how exam lists are generated and organized, describes each type of exam list used in the Manager, and describes the fields that each exam list contains.

How Exam Lists Work

A typical exam list is shown below. Regardless of the type of exam list being displayed, most of the controls in an exam list window are the same.

Exam list name and description

Selected exam

Column headings (click to sort list)

| Case # | Lock | Patient Name | ID # | Priority | Procedure | Image Date/Time | Status | #. | Onl | RC | Mod |
|--------------|------|---------------|-------|----------|---------------------------|------------------|--------|----|-----|-----|-----|
| 102399-58 | | ROSS,TEST | C9876 | 1-Stat | CHEST SINGLE VIEW | 10/11/9999@11:41 | EXAMIN | 1 | Y | JC2 | CR |
| 102399-66 | | ROSS,TEST | C9876 | 1-Stat | ELBOW 3 OR MORE VIEWS | 10/11/9999@11:43 | EXAMIN | 3 | Y | JC1 | CR |
| 012399-87 | | ROSS,TEST | C9876 | 1-Stat | CT HEAD W/O CONT | 10/24/9999@11:12 | EXAMIN | 30 | Y | | CT |
| 052699-101 | | HARROD,TEST | H7980 | 4-Rout | CT ABDOMEN W&W/O CONT | 05/26/9999@15:49 | EXAMIN | 62 | Y | | CT |
| 052699-102 | | HARROD,TEST | H7980 | 4-Rout | CT ABDOMEN W/O CONT | 05/26/9999@15:49 | EXAMIN | 31 | Y | | CT |
| 082699-12 | | DUMMONT,TEST | D4657 | 4-Rout | CT ABDOMEN W/O CONT | 08/26/9999@16:08 | EXAMIN | 31 | Y | | CT |
| 110199-43 | | TESTING,FIVE | T4444 | 4-Rout | ABDOMEN 2 VIEWS | 11/01/9999@09:21 | EXAMIN | 2 | Y | | CR |
| 121092-N | | FRED,TEST | F1543 | 4-Rout | UPPER GI W/O KUB | 12/10/9999@13:43 | EXAMIN | 15 | Y | | CR |
| 013099-3 | | LIFSCOMB,TEST | L2986 | 4-Rout | SHOULDER 2 OR MORE VIEWS | 01/30/9999@15:24 | EXAMIN | 3 | Y | | CR |
| 013099-5 | | DUMMONT,TEST | D4657 | 4-Rout | CT HEAD W/IV CONT | 01/30/9999@15:36 | EXAMIN | 24 | Y | | CT |
| 090499-33 | | TESTING,FIVE | T4444 | 4-Rout | CT HEAD W&W/O CONT | 09/04/9999@10:32 | EXAMIN | 60 | Y | | CT |
| 012199-55 | | TEST,FOUR | T3333 | 4-Rout | UPPER GI W/O KUB | 01/21/9999@14:05 | EXAMIN | 25 | Y | | CR |
| 052699-99 | | HARROD,TEST | H7980 | 4-Rout | CT CERVICAL SPINE W/O CON | 05/26/9999@13:04 | EXAMIN | 47 | Y | | CT |
| 090599-128 | | HARROD,TEST | H7980 | 4-Rout | UPPER GI AIR CONT W/O KUB | 09/05/9999@09:02 | EXAMIN | 36 | Y | | RF |
| 051399-18670 | | FIGMOND,TEST | F2016 | 4-Rout | RIBS UNILAT 2 VIEWS | 05/13/9999@16:41 | EXAMIN | 2 | Y | | CR |

Report Requisition OPEN EXAMs Patient Exams All Patient Exams Cancel

Exam lists organize exams by status or by patient name. Custom exam lists organize exams based on site-defined parameters.

When you open an exam list, you are sending a pre-defined query to the VISTA HIS. The query results (exams) are presented as entries in the exam list. There may be a brief delay before the exam list opens, depending on how much information must be processed and on the amount of traffic on the network.

To minimize delay, most sites are configured to have the UnRead and Recent exam lists pre-compiled (prepared in advance). The age of a pre-compiled list is shown near the top of the exam list window. Pre-compiled lists are periodically re-created to keep them current. The UnRead list is usually re-created every two or three minutes. The Recent list is re-created less frequently, but it is updated with newly interpreted exams whenever the UnRead list is re-created.

The UnRead, Recent, and All Active lists can be configured to exclude exams that are older than a certain time period, regardless of exam status. Outdated exams can be located using one of the patient lists, or by using Patient Lookup. This option is typically used for new sites transitioning to VistARad.

-  The UnRead, Recent, and All Active lists can be configured to show exam entries even when the exam has no associated images. If this is done, all exams with images are listed first.

Exam List Types

Exam lists are used to group exams into manageable categories. Each type of exam list is described in the following table. Any of these lists can be opened from the Manager main window.

| Exam List | Contains | Initial Sort | Notes |
|-------------------|--|---------------------------------------|---|
| UnRead | Exams with status of EXAMINED— exams ready to be interpreted. | Priority, then oldest Image Date/Time | If the UnRead exam list is left open for a long period of time, it may need to be re-opened periodically for it to include the exams most recently updated to a status of EXAMINED. |
| Recent | Exams with status of INTERPRETED or TRANSCRIBED. | Most recent Image Date/Time | Does not include unread exams. |
| All Active | Exams with status of EXAMINED, INTERPRETED, or TRANSCRIBED. | Most recent Image Date/Time | Combines the Recent and UnRead lists. |
| Patient Exams | An abbreviated list of exams available for a selected patient. | Most recent Image Date/Time | The list description may include a note that indicates if there are additional older exams for that patient. The size of the list determined on a site-by-site basis. |
| All Patient Exams | Lists all available exams for a selected patient. | Most recent Image Date/Time | Lists all available exams for a selected patient. |
| Custom lists | Site-defined | Site-defined | Contact your Imaging Coordinator for information about site-specific custom lists. |

Exam List Fields

Fields that can appear in an exam list are described in the following table. Fields are listed in the order that they would appear (left to right) in an open exam list. Additional fields, available for use in custom lists, are described on page [14](#).

Standard Exam List Fields

-  The Patient Name, ID #, and Priority fields are not present in the Patient Exams and All Patient Exams lists. The Interp By field is not present in the UnRead list.

| Field | Description |
|-----------------|---|
| Case # | The case number used to identify an exam. The case number is based on a patient's registration date (MMDDYY) and an ID number generated by the Radiology Package. In the Patient and All Patient exam lists, this field is labeled as "Day/Case." |
| Lock | If an unread exam is open by another radiologist for interpretation, that radiologist's initials will appear in this field. |
| Patient Name | The name of the examined patient, as stored in the VISTA system. |
| ID # | The first letter of a patient's last name and the last four digits in the patient's SSN. |
| Priority | The priority of the exam, based on the priority entered by the ordering clinician. Standard priority levels are: Stat, Urg (Urgent), PreOp, and Rout (Routine). |
| Procedure | The procedure performed on the examined patient. |
| Image Date/Time | The date and time that the images were processed by the DICOM Gateway. |
| Status | The status of the exam as reported by VISTA . Standard values are WAITING (OR CALLED FOR), EXAMINED, INTERPRETED, TRANSCRIBED, and COMPLETE. The names used for these values may vary from site to site. |
| # Img | Number of acquired images in the exam. |
| Onl | Indicates the online availability of images in the exam. Y Images are in short-term storage. N Images are in long-term storage, and may take up to several minutes to open. n/a Images are not available. |
| Mod | The acquisition modality. |
| Imaging Loc | Imaging location as entered in Radiology Package when exam is registered. |
| Interp By | Initials of the radiologist that interpreted the exam. |

Custom List Fields

Custom lists can include any field in a standard exam list, as well as the fields listed below. Custom lists are typically designed by a site's Imaging Coordinator and radiology management staff.

| Custom List Field | Description |
|-------------------|--|
| SSN-4 | The last four digits of the examined patient's social security number. |
| Rad Div | The hospital division. The exact use of this field is dependent on how it is defined at your site. |
| Pt Loc'n Abb | Abbreviated hospital service/ward as entered in order. |
| Pt Loc'n Name | Hospital service/ward as entered in order. The exact use of this field is dependent on how it is defined at your site. |
| ImgType | The image type. The exact use of this field is dependent on how it is defined at your site. |
| SORT_IMG_DT | Internal date format used for sorting. |
| MAGSRT | Internal value used for sorting exams by the presence or absence of images. A = Images, B = No images. |
| IntStat | Internal integer value for status codes. |

Opening Exams

This section explains how to use exam lists and Patient Lookup to select and display exams.

-  The UnRead list can become outdated if it is left open for long periods of time. To avoid this, refresh the list by clicking the UnRead button in the Manager main window, or set the Manager's preferences to reopen the UnRead list automatically. Manager preferences are described on page [65](#).
-  You do not have to wait for the UnRead list to be re-compiled if you need to open an urgent exam that has been very recently acquired. A patient list or Patient Lookup can locate an exam as soon as it is added to the **VISTA** HIS.

However, if you use this method to open an exam before its' status is EXAMINED, you may be opening the exam before all the images in the exam have been processed (acquired, linked to the patient record, and stored on the image server). You will need to reopen the exam at a future time to view any remaining images. The appearance of the exam on the UnRead list indicates that all of the images in the exam have been processed.

Opening Current Exams

The following steps explain how to open exams using the UnRead, Recent, or All Active exam lists. The steps in this section also apply to custom exam lists.

To open a current exam

- 1** In the Manager main window, click one of the exam list buttons located near the top of the window.
 - 2** When the exam list opens, locate the exam that you want to display.
 - In the UnRead list, the first lockable exam in the list will be highlighted.
 - You can click any of the column headings to sort the contents of an exam list.
 - 3** If you intend to interpret the exam and update its status, confirm no initials appear in the Lock column, and that the exam's current status is EXAMINED.
 - 4** If the exam is a CT, MR or XA exam, you can choose how you want the exam to be displayed.
 - To display the exam in the Stack Viewer, select the *View CT, MR & XA in Stack Viewer* check box.
 - To display the exam in the Layout Viewer, clear the *View CT, MR & XA in Stack Viewer* check box.
 - 5** Double-click the exam. You can also open multiple exams as described below:
 - To open multiple exams listed consecutively, click the first exam, press and hold down SHIFT, and click the last exam. Then click OPEN EXAMS.
 - To open multiple exams that are not listed consecutively, press and hold down CTRL, and then click each exam. Then click OPEN EXAMS.
-  Depending on how your preferences are set, the exam requisition or Patient exams list may open automatically. For more information, see page [65](#).

Opening Related or Prior Exams

To open related or prior exams, use the Patient Exams list or Patient Lookup.

- Use the Patient Exams list to locate related exams for a patient that appears in the UnRead, Recent, or All Active exam lists (or in any custom list).
- Use Patient Lookup to locate exams for any patient in the **VISTA** system.

Each method is described in detail below.

To use the Patient Exams list

- 1** If the Manager is hidden by the Layout Viewer or the Stack Viewer, go to the toolbar and click .
- 2** Use any exam list (including the Open Exam list, in the Manager main window) to locate the patient that you want to see a list of related exams for.
- 3** Select or right-click the patient name that you want to base the exam list on, then click one of the following options:
 - Click **Patient Exams** to open an abridged list of exams for the patient.
 - Click **All Patient Exams** to open a list that shows all exams for the patient you selected.
- 4** When the exam list opens, locate the exam that you want to display. You can click any of the column headings to sort the contents of the exam list.
- 5** If the exam is a CT, MR or XA exam, you can choose how you want the exam to be displayed:
 - To display the exam in the Stack Viewer, select the *View CT, MR & XA in Stack Viewer* check box.
 - To display the exam in the Layout Viewer, clear the *View CT, MR & XA in Stack Viewer* check box.
- 6** Double-click the exam. You can also open multiple exams as described below:
 - To open multiple exams listed consecutively, click the first exam, press and hold down SHIFT, and click the last exam. Then click OPEN EXAMS.
 - To open multiple exams that are not listed consecutively, press and hold down CTRL, and then click each exam. Then click OPEN EXAMS.

To use Patient Lookup

- 1 If the Manager is hidden by the Layout Viewer or the Stack Viewer, go to the toolbar and click .
- 2 Click Patient Lookup. The Patient Lookup window will open.
- 3 In the box near the top of the window, type the parameters you want use. You can use:
 - The first letter in the patient's last name and the last four digits in the patient's SSN. Do not use spaces.
 - The patient's social security number. Omit dashes.
 - At least three letters of the patient's last name, followed by a comma, followed by a first initial (omit spaces). You will get better results if you use most or all of the patient's name.
- 4 Press Enter (clicking OK will not work).
- 5 If more than one patient matches the parameters you entered, each patient will be listed in the window. Double-click the patient you want to see a list of exams for.
- 6 When the exam list opens, locate the exam that you want to display.
- 7 If you intend to interpret the exam and update its status, confirm no initials appear in the Lock column, and that the exam's current status is EXAMINED.
- 8 If the exam is a CT, MR or XA exam, you can choose how you want the exam to be displayed:
 - To display the exam in the Stack Viewer, select the *View CT, MR & XA in Stack Viewer* check box.
 - To display the exam in the Layout Viewer, clear the *View CT, MR & XA in Stack Viewer* check box.
- 9 Double-click the exam. You can also click the exam, and then click OPEN EXAMS.

Reopening Exams

To reopen an exam that you have viewed during the current session, use the patient history list.

To use the patient history list

- 1 Click View, located near the top of the Manager main window.
- 2 Click one of the listed patient names. The Patient Exams list will open.
- 3 Locate and double-click the exam you want to open.

Working with Requisitions and Reports

You can retrieve the following types of reports from the *VISTA* system:

- Exam requisitions
- Exam reports
- Health summary reports
- Patient profile reports

 Draft reports can be viewed by radiology personnel before they are verified by the interpreting radiologist. Depending on how the Radiology Package is configured, preliminary reports may also be viewable by other users in the *VISTA* system.

Opening Reports

Requisitions and reports can be opened at any point while reviewing exams. You can also open a requisition automatically, as described on page [65](#).

To open a report

- 1 Use an exam list to locate the exam you want to see reports for.
 - 2 Right-click the exam, then click one of the four report types.
 - If you clicked the Health Summary option, the VistA Patient Reports window will open. On the right side of the window, double-click the type of report you want to display.
 - Requisitions and reports can also be opened using the buttons near the bottom of the exam list window.
 - 3 The report that you selected will open.
 - If the report is larger than the window, drag the scroll bar on the right side of the window to display the rest of the report.
 - If VistARad is connected to a printer, reports can be printed. To print a report, click File, then click Print. When the Print dialog box opens, click OK.
 - If you open additional reports, the most recently selected report will be displayed in the report window. To switch between reports, click the Reports option in the report window, then click the report that you want to view.
-  Closing all exams in the Layout Viewer or Stack Viewer will close any open reports as well.

Evaluating Exams—Layout Viewer

This chapter explains how to use the Layout Viewer. It covers the following topics:

- [Exam Presentation in the Layout Viewer](#)
- [Adjusting Images](#)
- [Using Presets](#)
- [Using the ROI Tool](#)
- [Using Measurement Tools](#)
- [Using Annotation Tools](#)
- [Other Tools](#)

You can switch between the Stack Viewer and the Layout Viewer by clicking , located in the toolbar. To display the Manager, click .

Exam Presentation in the Layout Viewer

In the Layout Viewer, images in an exam are initially displayed based on two things: the active tiling mode; and case presets.

- Tiling determines how images are arranged in a group window. Typically, images are tiled horizontally—displayed from left to right, starting at the top left corner of the group window. You can also have images displayed from top to bottom. To control tiling, go to the Layout Viewer menu bar, click Group, point to Tiling, then click Horizontal or Vertical. You will need to change the layout of the current group if you want changes to take affect immediately
- Case presets determine the initial layout and display properties (window/level, scale, etc.) of an exam. Case presets are usually based on exam modality. For more information about case presets, see pages [27](#) and [70](#).

If an exam contains more than one series, the Series Processing option (described on page [65](#)) also controls how an exam is displayed.

- When series processing is turned off, all series in an exam are displayed in a single group window.
- When series processing is turned on, each series in an exam is displayed in a separate group window.

Scout images are handled differently from other images. The Layout Viewer can recognize one scout image per series. If a series contains more than one scout image, only the first image is treated as a scout.

- The Layout Viewer will display a slice indicator on the scout image. The indicator corresponds to the currently selected cross-sectional image in the exam.
- Scout images can be hidden by right-clicking the scout, pointing to Show/Hide, then clicking Scout.

Adjusting Images

This section covers the following topics:

- [Panning Images](#)
- [Changing Window/Level](#)
- [Changing Image Scale](#)
- [Sharpening/Smoothing Images](#)
- [Inverting Images](#)
- [Reorienting Images](#)
- [Changing Layout](#)
- [Using Mouse Mode and Tool Mode](#)

Panning Images

If an image is larger than its frame, you can use the pan tool to see the rest of the image without resizing the frame or scaling the image. You can pan images two ways: with the mouse, and with the Pan/Scroll palette.

To pan using the mouse

Confirm that no other tools are active (if the pointer does not look like , right-click once). Then use the left mouse button to drag the image. If the image cannot be panned, then the entire image is already shown.

To use the Pan/Scroll palette

- 1 Click  in the Layout Viewer toolbar to open the Pan/Scroll palette.
- 2 If it is not selected already, click the image you want to pan.
- 3 Point inside the outlined area in the Pan/Scroll palette. The outlined area indicates the relative position of the selected image in the frame.
- 4 Drag the mouse. Both the sample area and the selected image will update as you move the mouse.

- 5 If the rest of the images in the exam are larger than their frames, and if you want to make the same area visible in all the images, click .
- 6 When you are finished, click  to close the Pan/Scroll palette.

Changing Window/Level

You can change window/level using the mouse or the Window/Level palette. You can also use Auto Window/Level when you want to base window/level values on a type of tissue, such as brain or bone.

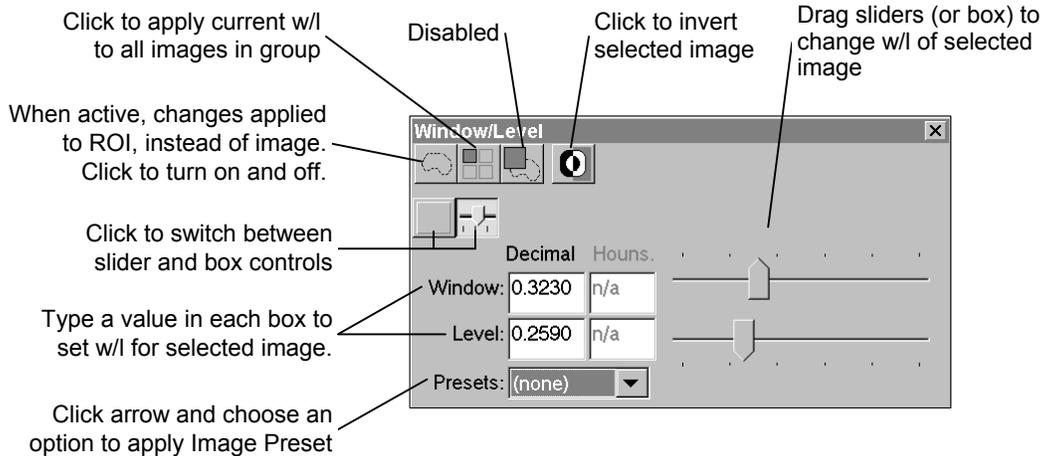
To change window/level with the mouse

- 1 Switch to mouse mode by clicking  (located in the Layout Viewer toolbar).
- 2 Right-click the image you want to adjust and click Win/Lev, or click  in toolbar. The mouse pointer will change to .
- 3 Drag the mouse. By default, dragging up and down will change window, and dragging left and right will change level.
 -  By default, you can change window/level by dragging with the right mouse button. For information about how the right mouse button can be configured, see page [68](#).
- 4 As the mouse is moved, the changes will be reflected in the selected image. You can continue dragging past the edges of the image, if necessary.
- 5 When you are finished, right-click once. The mouse pointer will change to .

To use the Window/Level palette

- 1 Open the Window/Level palette using either of the methods listed below.
 - If tool mode is not active, click . Then click , or right-click the image you want to change and click Window/Level.
 - Double-click the Win/Lev area in the status bar.
- 2 If the image you want to change is not already selected, click the image.

- 3** Drag the sliders (or the small box) on the right side of the palette to change window/level. Other controls in the Window/Level palette are described below.



- 4** When you are finished, you can leave the palette open until you need to use it again, or you can close it by clicking .

To use Auto Window/Level—defined region

- 1 Click  in the Layout Viewer toolbar.
- 2 Point to the image you want to adjust. As the pointer enters the group window, it will change to .
- 3 Drag the mouse to define the area that you want to base window/level on. When you release the mouse button, the new values will be applied automatically to the rest of the image.
 -  You can use auto-adjust in an image that contains a ROI, but you cannot define an area in the ROI itself.
- 4 You can continue to change window/level values as described in step 3. When you are finished, right-click once. The mouse pointer will change to .

To use Auto Window/Level—entire image

- 1 Select the image you want to adjust.
- 2 From the Layout Viewer menu bar, click Image, point to Auto Adjust Window/Level, then click Current Image or All Images.

Changing Image Scale

You can change an image's scale from 10 to 800% of its original size. You can also use Size to Fit to make image scale dependent on the current layout.

-  If you scale an image that contains a ROI, the ROI's scale may also change as well. For more information, see page [31](#).

To change scale with the mouse

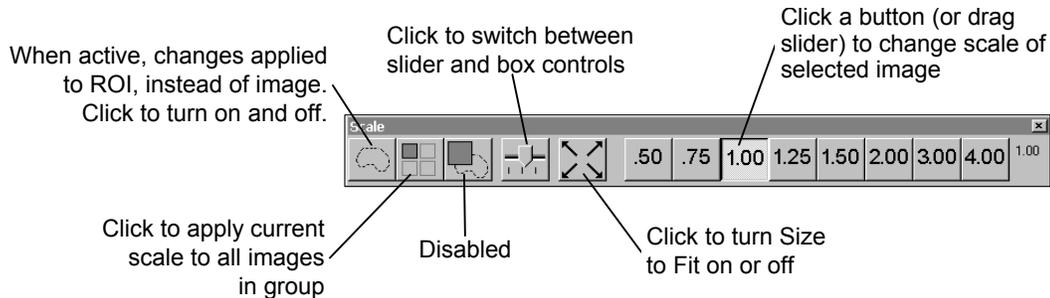
- 1 Switch to mouse mode by clicking  (located in the Layout Viewer toolbar).
- 2 Right-click the image you want to adjust and click Scale, or click  on the toolbar. The mouse pointer will change to .
- 3 Drag the mouse.
 - Drag up or left to increase scale.
 - Drag down or right to reduce scale.
- 4 As the mouse is moved, the changes will be reflected in the selected image. You can continue dragging past the edges of the image, if necessary.
- 5 When you are finished, right-click once. The mouse pointer will change to .

-  The right mouse button can be configured to change scale. For more information, see page [68](#).

To use the Scale palette

- 1 Open the Scale palette using either of the following methods:
 - If tool mode is not already active, go to the Layout Viewer toolbar and click . Then click , or right-click the image you want to change and click Scale.
 - Double-click the Scale area in the status bar.
- 2 If the image you want to change is not already selected, click the image.

- 3 Drag the slider or click the buttons on the right side of the palette to change scale. Other controls in the Scale palette are described below.



- 4 When you are finished, you can leave the palette open until you need to use it again, or you can close it by clicking .

To use Size to Fit

Size to Fit makes the scale of an image dependent on the current layout. When Size to Fit is active:

- An image will be displayed using the highest percentage that allows the entire image to be shown.
- An image's scale will automatically change when layout is changed.

If you change an image's scale manually, Size to Fit is disabled, and image scale will not be adjusted for subsequent layout changes. You can re-enable Size to Fit using  in the Scale palette.

To propagate Size to Fit across all images in a group window, right-click an image that has Size to Fit active, point to Apply to All, then click Scale.

Sharpening/Smoothing Images

Use the sharpen/smooth tool to alter the amount of contrast between adjacent pixels in an image.

- Sharpening an image to enhances the edges of areas in an image, and will show increased detail in areas with low contrast.
- Smoothing an image can reduce the amount of “noise” in the image.

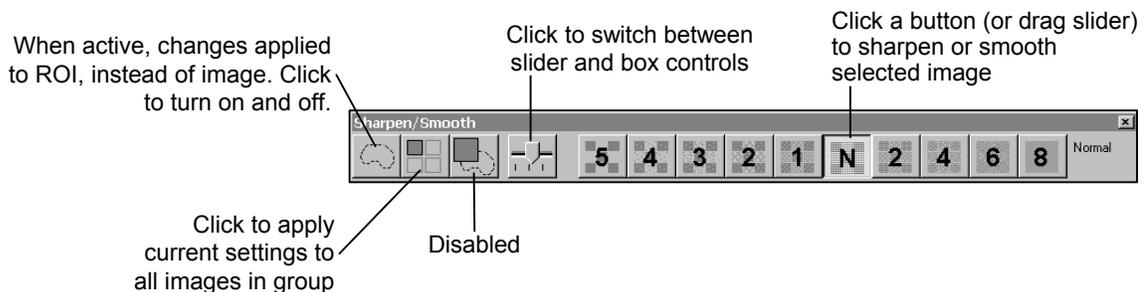
You can sharpen or smooth images with the mouse, or with the Sharpen/Smooth Image palette.

To sharpen/smooth with the mouse

- 1 Switch to mouse mode by clicking  (located in the Layout Viewer toolbar).
- 2 Right-click the image you want to adjust and click Sharpen, or click  on the toolbar. The mouse pointer will change to .
- 3 Drag the mouse.
 - Drag up or left to sharpen.
 - Drag down or right to smooth.
- 4 As the mouse is moved, the changes will be reflected in the selected image. You can continue dragging past the edges of the image, if necessary.
- 5 When you are finished, right-click once to cancel the current function. The mouse pointer will change to .

To use the Sharpen/Smooth palette

- 1 Open the Sharpen/Smooth palette using either of the following methods:
 - If tool mode is not already active, click . Then click , or right-click the image you want to change and click Sharpen/Smooth.
 - Double-click the Sharpen/Smooth area in the status bar.
- 2 If the image you want to change is not already selected, click the image.
- 3 Drag the slider or click the buttons on the right side of the palette. Other controls in the Sharpen/Smooth palette are described below:



- 4 When you are finished, you can leave the palette open until you need to use it again, or you can close it by clicking .

Inverting Images

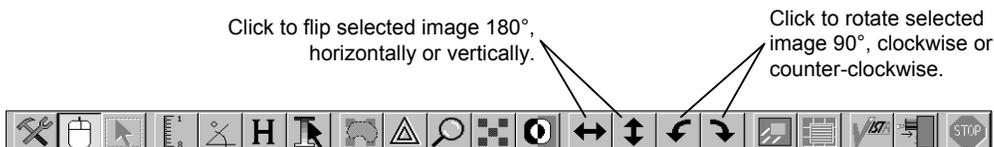
Use one of the following methods to invert an image:

- Right-click the image and click Invert.
- Click the Invert button , which is located in the Layout Viewer toolbar and the Window/Level palette.
- In the Layout Viewer menu bar, click Image, point to Invert, then click Current Image.

To return an inverted image to its original state, invert it again.

Reorienting Images

To change the orientation of an image, click one of the toolbar buttons shown below:



Changing Layout

The active layout determines how many images are visible at a time. You can change image layout using options on the shortcut menu.

-  If Size to Fit is turned on for an image, the image is automatically scaled to fit the new image frame when the layout is changed. For more information, see page [23](#).

To change layout

- 1 Right-click any image, then point to Layouts. A list of frequently used layout choices will appear.
- 2 Click one of the options. If you want to choose a layout other than the displayed options, click More. Then:
 - Click an option, or:
 - Click Custom. When the Image Layout box opens, click the up and down arrows to specify the number of columns and rows, then click OK.

Using Mouse Mode and Tool Mode

Mouse mode and tool mode affect how window/level, scale, and sharpen/smooth adjustments are made. One of the two modes is always active.

The  and  buttons in the Layout Viewer toolbar allow you to switch between mouse mode and tool mode. The active mode is indicated by whichever button is highlighted (pressed in).

When mouse mode is active, window/level, scale, or sharpness control is temporarily assigned to the left mouse button. After choosing window/level, scale, or sharpness from the toolbar or image shortcut menu, you can change images by dragging with the left mouse button.

When tool mode is active, a tool palette for window/level, scale, or sharpen/smooth is opened when you click the appropriate option on the toolbar or the image shortcut menu.

Using Presets

Use case and image presets to adjust multiple image properties for the entire exam in a single step.

- Case presets are designed to be applied automatically when an exam is opened. They can also be applied manually.
- Image presets are designed to be applied manually as needed.

VistARad is installed with several pre-defined case and image presets. These presets can be used as-is or altered to meet the needs of your site. For information about customizing presets, see page [70](#).

 Case presets do not affect exams displayed in the Stack Viewer. However, you can apply image presets to exams displayed in the Stack Viewer. For more information, see page [56](#).

How Presets Work

Whenever an exam is opened in the Layout Viewer, VistARad checks the exam's modality, and checks for a case preset associated with that modality. A case preset can affect:

- Layout
- Window/level
- Scale
- Sharpness
- Inversion

If there are no case presets that match the modality of the exam being opened, the Default case preset is used. If used, the Default case preset applies the following parameters:

| Parameter | Description |
|--------------|---|
| Layout | 2 x 2 |
| Window/Level | Uses values specified at acquisition modality, if available. If values are not available, Auto-adjust is used to calculate window/level on an image-by-image basis. |
| Scale | Size to Fit (images are scaled to largest size that will fit into image frame). |
| Sharpness | 0 (Normal) |
| Inversion | Off |

Once an exam is displayed, you can apply a different case preset. You can also apply an image preset. Image presets are intended to be used in more specialized situations, such as when you want adjust images by body part or contrast media. Image presets can affect window/level, scale, and sharpness.

Applying Presets

When a case or image preset is applied, all non-scout images in a group window will be changed based on the settings in the preset.

- Keyboard shortcuts can be assigned to presets. To find out if a keyboard shortcut exists for a preset, check the preset's definition.
- To review a preset's definition, click Settings, then click Image Presets or Case Presets.

The following steps explain how to apply image presets and case presets.

To apply image presets

- 1 Right-click any image in the exam you want to apply an image preset to.
- 2 Point to Image Presets, and click one of the options that appear.

To apply case presets

- 1 Right-click any image in the exam you want to apply a case preset to.
- 2 Point to Case Preset, and click one of the options that appear.

Using the ROI Tool

A ROI (Region Of Interest) lets you manipulate an area in an image without altering the rest of the image. ROIs can be rectangular or elliptical. While ROIs are most frequently used as magnifying glasses, you can also change window/level, adjust sharpness, and invert image data shown in a ROI.

Creating and Working with ROIs

The following steps explain how to create, change, and delete ROIs.

To create a ROI

- 1 Right-click the image that you want to create a ROI for, then click Add ROI.

 The initial shape of a ROI is set from the Element Settings dialog. For more information, see page [31](#). If you want to specify the base shape in advance, go to the menu bar and click ROI, then click Rectangle or Ellipse.

- 2 When the mouse pointer turns to , drag to create the ROI.

To move a ROI

To move a ROI, point inside the ROI, then drag it to another part of the image.

- ROIs can be moved anywhere within an image, but not beyond the boundaries of the image.
- Changes to sharpness in the ROI are not displayed until the move is complete. This is done to reduce processing time.

To resize a ROI

To resize a ROI, click the ROI, then point to one of the handles that appear on the edges of the ROI. When the pointer looks like , drag to resize the ROI.

**To mask areas outside a ROI**

To limit your field of view to only the area contained in the ROI, right-click the ROI and click Blackout Background. To restore the image, right-click the ROI and click Restore Background.

 Any annotations or measurements in the current image will remain visible.

To hide a ROI

- To temporarily hide a ROI, right-click the ROI and click Hide ROI.
- To display a hidden ROI, right-click the image containing the ROI, point to Show/Hide, then click ROI Layer.

To change image data inside a ROI

| To ... | Do this... |
|------------------|---|
| Window/Level | Point inside the ROI and drag using the right mouse button. |
| Scale or Sharpen | <ol style="list-style-type: none"> 1 Change to mouse mode by clicking . 2 Right-click inside the ROI, then click Scale or Sharpen. 3 When the mouse pointer changes, drag to make your changes (changes to sharpness will not be displayed until the mouse button is released). You can, if needed, drag past the edges of the ROI. 4 When you are finished, right-click once to cancel the current function. The mouse pointer will change to . |

| To ... | Do this... |
|------------------------|---|
| Invert | Right-click the ROI, then click Invert. Or, on the Layout Viewer toolbar, click  . |
| Apply changes to image | <ol style="list-style-type: none"> 1 Right-click the ROI, or go to the menu bar and click ROI. 2 Point to Apply to Image, and click one of the options that appear. |

 The Window/Level, Scale, and Sharpness palettes can also be used to change ROIs. To do so, open the palette you want to use, then click . Any subsequent changes made will be applied to the ROI in the currently selected image.

To delete a ROI

ROIs are automatically deleted when an exam is closed. To delete ROIs manually, use one of the following methods:

- To delete a single ROI, right-click it, then click Delete ROI.
- To delete all ROIs in a group window, go to the menu bar, and click the ROI option. Point to Delete ROI, then click All Images.

ROI Settings

The options in the Element Settings dialog control the appearance of a ROI and determine how a ROI responds to certain types of changes.

To change ROI settings

- 1 Open the Element Settings dialog using one of the following methods:
 - Right-click a ROI, then click ROI Settings.
 - In the menu bar, click Settings, then click ROI Settings.
- 2 Select or clear the options you want to change. Each option in the Region Of Interest tab is described in the following table:

| Option | | Description |
|-------------------------|--------------------------|---|
| Initial Settings | Scale Value % Difference | Click the arrows or type a number to set the scale of a newly created ROI relative to the scale of the parent image. For example, if this box is set to 25%, and a ROI was created on an image scaled at 50%, the ROI scale would be 75%. |
| | Default Shape | Click the arrow next to the box and click an option to select either Rectangle or Ellipse. |
| ROI Border | Width (in Pixels) | Click the arrows or type a number to set the width of the border surrounding each ROI. |

| Option | | Description |
|----------------------|-----------------------------|--|
| | Color | Click the arrow next to the box and click an option to select the color of the ROI border. You can also click Custom to view additional colors. |
| Other Options | Show ROI Border | Select check box to show ROI borders. Clear check box to hide ROI borders. |
| | Scale With Image | Select check box to make a ROI's scale change as the scale of the parent image is changed. Clear check box to make a ROI's scale independent of the scale of the parent image. |
| | XoR Border | Select check box to display the border as the exact opposite of each pixel it covers. Clear check box to display the ROI border using the color specified in the Color box. |
| | Auto Scroll Window With ROI | Select check box to make image pan if a ROI is moved to the edges of the image frame. Clear check box to make image not pan if a ROI is moved to the edges of the image frame. |

 Changes to Initial Settings will not affect existing ROIs. However, they will be applied to any new ROIs.

- 3 When you are finished, click OK to apply your changes and close the dialog, or click Apply to apply your changes and leave the dialog open.

Using Measurement Tools

The Layout Viewer provides several tools that can be used to measure features in an image. These tools are described in the following topics:

- [The Measure Line & Measure Area Tools](#)
- [The Angle Tool](#)
- [The Hounsfield Area Tool](#)
- [The Pixel Info Tool](#)
- [The Calibrate Tool](#)
- [Changing Measurement Settings](#)
- [Deleting Measurements](#)

 Measurement annotations, once created, may not update properly if they are moved or resized. If you need to fine tune a measurement, delete and then recreate it.

The Measure Line & Measure Area Tools

Use the measure line and measure area tools to determine the length or general dimensions of an area in an image.

To measure lines or areas

- 1 If you are measuring a small area, increase the scale of the image to improve the precision of the measurement.
- 2 Right-click the image that contains the area you want to measure, point to Measure, then click Line or Rectangle/Area.

 If the Calibrate Measurements dialog opens, you will need to specify a pixel size before using the measure line/area tool. For more information, see page [35](#).

- 3 The pointer will change to . Position the upper left corner of the pointer over the point that you want to begin measuring.
- 4 Drag to define the line or rectangle that you want to use. When you release the mouse button, the dimensions will appear next to the measured feature.
 - The measurement tool will remain active. You can measure other images in the current group window.
 - To turn off the measurement tool, right-click once. The pointer will change to .

The Angle Tool

Use the angle tool to measure the angle of features (typically joints) in an image.

To measure angles

- 1 If you are measuring a small area, increase the scale of the image to improve the precision of the measurement.
- 2 Use one of the following methods to activate the angle tool:
 - On the toolbar or the Annotation palette, click .
 - Go to the menu bar, click Measurement, then click Angle.

 If the Calibrate Measurements dialog opens, you will need to specify a pixel size before using the angle tool. For more information, see page [35](#).
- 3 The mouse pointer will change to . Position the upper left corner of the pointer over the point that you want to begin measuring.
- 4 Drag the mouse to create two lines that correspond to the angle you want to measure.
 - The start point of the first line will be treated as the vertex of the angle.
 - The lines should be drawn from the vertex out.
 - The two lines do not have to meet.
- 5 After the angle is created, a label will appear next to the angle. You can draw more angles, or right-click once to turn off the angle tool.

The Hounsfield Area Tool

Use the Hounsfield area tool to designate an area in a CT image and display the Hounsfield unit average, range, and standard deviation.

To measure Hounsfield units

- 1 If you are measuring a small object, increase the scale of the image to improve the precision of the measurement.
- 2 Use one of the following methods to activate the Hounsfield area tool:
 - On the toolbar or the Annotation palette, click .
 - Right-click an image, point to Measure, and click Hounsfield Average.
 - Go to the menu bar, click Measurement, then click Hounsfield Average.
- 3 The mouse pointer will change to . Position the upper left corner of the pointer over the point that you want to begin measuring.

- 4 Drag the mouse to define a rectangle. When you release the mouse button, the average, standard deviation, and range will be shown in Hounsfield units.
 - The Hounsfield tool will remain active. You can choose to measure additional parts of the image, or you can turn off the tool by right-clicking.
 - To turn off the tool, right-click once. The pointer will change to .

The Pixel Info Tool

The pixel information tool lets you display X-Y coordinate, pixel value (grayscale) and Hounsfield (CT images only) information on a pixel-by-pixel basis.

To use the pixel info tool

- 1 Use one of the following methods to open the Pixel Info palette:
 - On the Layout Viewer toolbar, click .
 - Right-click an image, point to Measure, then click Pixel Info.
 - Go to the menu bar, click Tools, then click Pixel Information.
- 2 To view additional information, move the mouse. The information in the Pixel Info palette will be updated as the mouse is moved.
 - To view more general image information, expand the window by clicking the button on the right side of the window.
 - When you are finished, click  to close the Pixel Info palette.

The Calibrate Tool

Use the calibrate tool to define units of measurement when pixel size information is not available. The calibrate tool will activate automatically if you try to measure a feature in an image without an embedded pixel size.

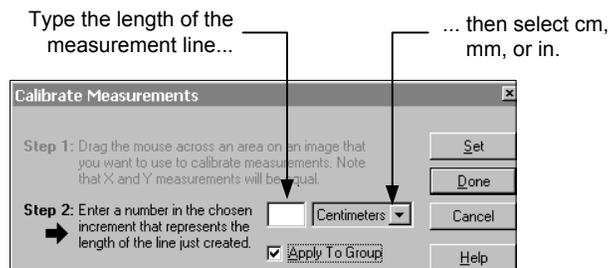
-  To use the calibrate tool, the image must contain tick marks or some other visual means of establishing a standard. The accuracy of the calibrate tool is dependent upon the accuracy of the visual guide in the image.

Before using the calibrate tool, you may want to increase the scale of the image that you are using to define the pixel size. This will make it easier for you to place your measurement line start and endpoints precisely.

To define measurement units

- 1 If the Calibrate Measurements dialog is not already open, go to the menu bar, click Measurement, then click Calibrate.

- 2 When the dialog opens, point to the image that contains the scale that you want to use for the basis of your measurements. The mouse pointer should look like .
- 3 Drag the mouse to draw a line between the two points you want to use to establish your measurement scale. If the line is not placed to your satisfaction, draw a second line. The second line will replace the initial one.
- 4 In the Calibrate Measurements dialog, specify the length of the line that was drawn, then, depending on the units of measurement used by your embedded measurement indicator, choose centimeters, millimeters, or inches.



- 5 If you want the newly defined pixel size to apply to all images in the group window, select the Apply to Group checkbox.
- 6 Click Set, then click Done.

Changing Measurement Settings

Use the Element Settings dialog to control the appearance of measurement lines and labels.

To change measurement settings

- 1 Open the Element Settings dialog using one of the following methods:
 - Right-click a measurement, then click Measurement/Data Layer Settings.
 - In the menu bar, click Settings, then click Element Settings.
- 2 Select or clear the options you want to change. Each option in the Measurement/Data Layer tab is described in the following table:

| Option | Description |
|--------|--|
| Font | <p>The currently used font for measurement labels (and the data overlay) is shown near the top of the Font area. To change the font used:</p> <ol style="list-style-type: none"> 1 Click Font. The Font dialog will open. 2 Select the font type, style, size, and color. 3 Click OK. |

| Option | Description |
|--------------------------|--|
| Increment | Click an option to display measurements in centimeters, millimeters, or inches. |
| Measurement Line (Color) | Click the arrow next to the Color box and click an option to select the color used for measurement lines. You can also click Custom to view additional colors. |
| XoR Border | Select to display the border as the exact opposite of each pixel it covers. Clear to display the ROI border using the color specified in the Color box. |

 Changes to measurement settings may not take affect immediately.

- 4 When you are finished, click OK to apply your changes and close the dialog, or click Apply to apply your changes and leave the dialog open.

Deleting Measurements

Measurements are deleted automatically when an exam is closed. You can also manually delete measurements using the following methods.

To delete single measurements

- Right-click the measurement, point to Delete Measurements, and click Selected.
- If the Annotation Palette is visible, click the measurement, then click .
- Click the measurement, then press the Delete key.

To delete multiple measurements

- To delete all measurements in an image, right-click a measurement in that image, point to Delete Measurements, and click All.
- To delete all measurements in a group window, go to the main menu, click Measurement, point to Delete Measurements, then click All Images.

Using Annotation Tools

This section explains how to annotate images using shapes, text labels, and automatic numbering. This section covers the following topics:

- [Creating Annotations](#)
- [Working with Annotations](#)
- [Changing Annotation Settings](#)
- [Changing Auto Number Settings](#)

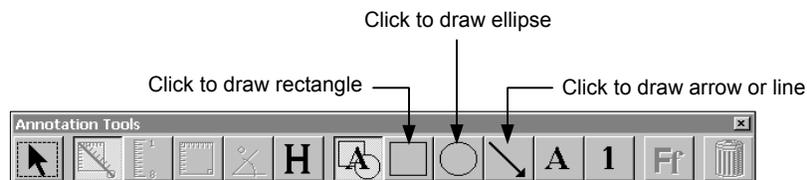
 Annotations cannot be saved in electronic form. However, if the VistARad workstation is connected to a printer, annotated images can be printed by selecting the Print option from the File menu in the Layout Viewer menu bar.

Creating Annotations

The steps used for creating annotation shapes, text boxes, and auto number boxes vary. Each method is described below.

To draw lines, rectangles, or ellipses

- 1 Right-click an image and click Annotate. When the Annotation palette displays, click the button that represents the shape you want to create.



-  To specify a particular shape without opening the Annotation palette, go to the menu bar, click Annotation, then click an option.
- 2 When the mouse pointer looks like \oplus , point to the image you want to annotate and drag the mouse to create the shape. An outline of the shape will be shown as you drag the mouse.
- 3 Release the left mouse button when the outlined area is the desired size and shape.

To create text labels

- 1 Right-click an image and click Annotate. When the Annotation palette displays, click .
-  To create a text label without opening the Annotation palette, go to the menu bar, click Annotation, then click Add Text Field.
- 2 When the mouse pointer turns to , point to the image you want to annotate and drag to create the box that the text will be contained in.
- 3 After the box is created, a cursor will appear in the box. Type the text you want to appear in the box, and press Enter. The box will size itself automatically if the text you typed is longer than the width of the text box.

To create auto number labels

- 1 Right-click an image and click Annotate. When the Annotation palette displays, click .
-  To create auto number labels without opening the Annotation palette, go to the menu bar, click Annotation, point to Auto Number, then click On.
- 2 When the Auto Number dialog opens, type the starting value you want to use. You can use one of the following:
 - Numeric (1 – 255)
 - Alphabetic (A – Z, upper or lower case)
 - C-spine, T-spine, or L-spine (Cn , Tn , or Ln , where n is the starting number).
- 3 If you will be numbering more than one image in the current group window, and you want the number style you've specified to be used the next time you auto number an image, select Apply to Group.
- 4 Click OK. The Auto Number box will close and the pointer will look like .
- 5 Point to where you want the first number in the sequence to be located, and drag to create a box. When you release the mouse, a number will automatically be added to the box.
- 6 Repeat the previous step for each number you want to add.
- 7 When you are finished, right-click once to cancel numbering mode.

Working with Annotations

Once an annotation has been created, it can be:

- Moved
- Resized
- Deleted
- Edited (text labels only)
- Hidden

You can also set properties of all annotations using the Element Settings dialog. For more information, see page [41](#).

To move annotations

| To move | Do this... |
|---|--|
| One annotation (only annotation in image) | Point to the border of the annotation. When the pointer changes to  , drag the annotation to a new location. |
| One annotation (one of multiple annotations in image) | <ol style="list-style-type: none"> 1 Turn on the select object mode by clicking  (this button is located on both the Layout Viewer toolbar and the Annotation palette). 2 Point to the border of the annotation. 3 When the mouse pointer changes to , drag the annotation to a different location. 4 Turn off the Select Object mode by right-clicking once. |
| All annotations in image | Point to the border of the annotation and drag the mouse. |

To resize annotations

| To resize | Do this... |
|------------------------|--|
| Rectangles or ellipses | <ol style="list-style-type: none"> 1 Click the annotation. 2 Point to one of the handles that appear. 3 When the pointer changes to , drag the mouse to change the shape. |
| Lines | <ol style="list-style-type: none"> 1 Click the line. 2 Point to one of the line's endpoints. 3 When the pointer changes to , drag to reposition the endpoint. |

To edit annotation text labels

- 1 Click inside the text label. A cursor will appear before the first character in the label.
- 2 Edit the text.
- 3 When you are finished, press Enter.

To show or hide annotations

Once created, annotations can be hidden and revealed on an image-by-image basis.

- To hide an annotation, right-click the annotation and click Hide Annotation.
- To show hidden annotations, right-click the image, point to Show/Hide, and click Annotations.

To delete annotations

Annotations are automatically deleted when an exam is closed. To delete one or more annotations manually, use one of the following methods:

| To Delete | Do this... |
|--|---|
| One annotation | <ul style="list-style-type: none"> • Right-click the annotation, point to Delete Annotations, and click Selected. • Select the annotation, and click  on the Element Palette. • Select the annotation. Then go to the menu bar, click Annotation, point to Delete Annotations, then click Selected. |
| All annotations in an image | <ul style="list-style-type: none"> • Right-click an image, point to Show/Hide, then click Annotations. • Go to the menu bar, and click Annotation. Point to Delete Annotations, and click All Images. |
| All elements (including ROIs and measurements) | <ul style="list-style-type: none"> • Go to the menu bar, click Edit, and point to Delete All Elements. Then click the Current Image or All Images option. |

Changing Annotation Settings

You can use the Element Settings dialog to control the initial appearance of annotation shapes and labels.

To change annotation settings

- 1 Open the Element Settings dialog using one of the following methods:
 - Right-click an annotation, then click Annotation Settings.
 - In the menu bar, click Settings, then click Annotation Settings.

- 2 Select or clear the options you want to change. Each option in the Annotation tab is described in the following table:

| Option | | Description |
|------------------------|----------------------------------|---|
| Font | Font | The font used for annotation labels is shown near the top of the Font area. To change the font used: 1 Click Font. The Font dialog will open. 2 Select the font type, style, size, and color. 3 Click OK. |
| | Justify | Click the arrow next to the box and click an option to select the type of justification to use for text labels. |
| Line Style | N/A | Click an option to select the type of line you want to use with the line tool. |
| Annotation Line | Width (in pixels) | Click the arrows or type a number to set the width of the line used for annotations. |
| | Color | Click the arrow next to the box and click an option to select the color used for annotation lines. You can also click Custom to view additional colors. |
| Other Options | Show Text Border | Select to show borders around text labels. Clear to hide borders around text labels. |
| | Scale With Image | Select to make an annotation's size relative to the scale of the image. Clear to make an annotation's size absolute (the same regardless of image scale). |
| | XoR Lines | Select to make an annotation border appear as the exact opposite of each image pixel it covers. Clear to make annotation lines use the color specified in the Color box. |
| | Auto Scroll Window With Elements | Select to make image pan if an annotation is moved to the edges of the image frame. Clear to make image not pan if an annotation is moved to the edges of the image frame. |

 Changes to annotation settings may not take affect immediately.

- 3 When you are finished, click OK to apply your changes and close the dialog, or click Apply to apply your changes and leave the dialog open.

Changing Auto Number Settings

You can use the Element Settings dialog to control the appearance of auto number labels.

To change auto number settings

- 1 Open the Element Settings dialog using one of the following methods:
 - Right-click an auto number, click Annotation Settings, then click the Auto Number tab.
 - In the menu bar, click Settings, then Auto Number Settings.
- 2 Select or clear the options you want to change. Each option in the Auto Number tab is described in the following table:

| Option | | Description |
|----------------------|--------------|--|
| Number Format | Text | If numeric or alphabetic number styles are used, you can click this box and type text that you want to precede each number. This box cannot be used when spine-related number styles are used. |
| | Number Style | Click the arrow next to the box and click an option to select the type of numbering to use for auto number labels. |
| | Start At | Click the arrows or type a number to set a starting number for auto number labels. |
| Background | Style | Click the arrow next to the box to select a background style. |
| | Color | Click the arrow next to the box and click an option to select the background color used for auto number labels. You can also click Custom to view additional colors. |

-  The initial font and “Other Options” used for auto numbers are controlled from the Annotation tab in the Element Settings dialog.
 -  Changes to auto number settings may not take affect immediately.
- 3 When you are finished, click OK to apply your changes and close the dialog, or click Apply to apply your changes and leave the dialog open.

Other Tools

This section describes additional Layout Viewer tools that can be used while working with images. It covers the following topics:

- [Using Show/Hide](#)
- [Undoing Changes](#)
- [Using Apply to All](#)

Using Show/Hide

Use Show/Hide when you want to temporarily hide ROIs, annotations, measurements, text overlay data, or scout images. Commands that can be used to show or hide various elements are summarized in the following table.

| To hide or show | Do this |
|-----------------|---|
| ROIs | Right-click an image, point to Show/Hide, then click ROI Layer. |
| Annotations | Right-click an image, point to Show/Hide, then click Annotations. |
| Measurements | Right-click an image, point to Show/Hide, then click Measurements. |
| Text overlays | <ul style="list-style-type: none">• For a single image, right-click an image, point to Show/Hide, then click Data.• For all images, go to the menu bar, click Image, then point to Data Overlay. Click All Images Hide to affect all images in the group. |
| Scout image | <p>Right-click any image in the exam, and point to Show/Hide, then click Scout Image.</p> <ul style="list-style-type: none">• When a scout image is shown or hidden, images are shifted to accommodate the addition or removal of the scout.• This option will not work if all the images in a group can be displayed on the screen at once. |

Undoing Changes

If you make a change that you want to undo, you can:

- Restore image defaults, which will make images revert to their original display parameters state (annotations, ROIs, and, measurements will be retained).
- Undo the most recently made change.
- Close and reopen the exam.

To restore image defaults

- 1 Go to the menu bar, click Image, then point to Restore Image Defaults.
- 2 Click one of the options that appear.

To use Undo/Redo

- 1 Go to the Layout Viewer menu bar, and click Edit.
- 2 Note the description that follows the Undo or Redo options. If the description matches the action you want to perform, click Undo or Redo.



Undo/Redo works best for basic changes, such as undoing a Window/Level change, or returning a moved annotation to its previous location. Using Undo and Redo for more complex changes may not have the desired results.

Using Apply to All

The following attributes can be copied from an image to a group, or from a ROI to an image:

- Window/level
- Orientation
- Scale
- Pan/Scroll
- Sharpness
- Inversion

To apply attributes from an image to a group

Right-click the image that will be the basis of the attribute you want to apply, point to Apply to All, then click the option you want to use.



To apply Size to Fit to all images, locate an image with the Size to Fit attribute turned on, and then use Apply to All > Scale.

To apply attributes from a ROI to an image

Right-click the ROI, point to Apply to Image, then click the option you want to use.

Evaluating Exams—Stack Viewer

The Stack Viewer is used for displaying CT, MR, and XA (x-ray angiographic) exams. This chapter explains how to use the Stack Viewer, and covers the following topics:

- [Exam Presentation in the Stack Viewer](#)
- [Working with Cells](#)
- [Navigating in a Stack](#)
- [Adjusting Images](#)
- [Other Tools](#)

 You can switch between the Stack Viewer and the Layout Viewer by clicking , located in the toolbar. To display the Manager, click .

Exam Presentation in the Stack Viewer

When exams are opened in the Stack Viewer, each exam is displayed in a separate row. If there are not enough rows in the Stack Viewer window to display all open exams, new rows are generated to accommodate all open exams. The maximum number of displayed exams is limited only by the amount of memory in your computer.

 The series processing option, controlled from the Manager, has no effect on exams displayed in the Stack Viewer.

Each row contains one or more cells. Each cell contains a scout image or a stack of one or more cross-sectional images (usually, a single series). If there are not enough cells in a row to accommodate an exam's scouts and stacks (series), the Stack Viewer will generate additional cells as needed.

In each stack of cross-sectional images, only the 'top' image is displayed. The Stack Viewer uses positional data in the image header files to determine the order of images within a stack.

All images are scaled to fit the dimensions of the cell they are contained in. Initial window/level is based on values passed from the modality, or, if window/level information is not available, window/level is calculated based on pixel values in each image.

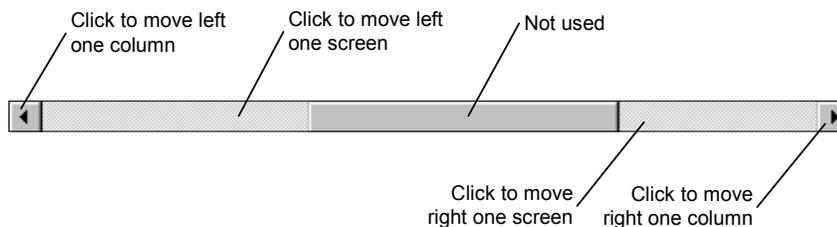
Working with Cells

This section covers:

- [Using the Scroll Bar](#)
- [Changing Layout](#)
- [Moving Cells](#)
- [Splitting Stacks](#)
- [Linking Stacks](#)
- [Creating Scout Images](#)

Using the Scroll Bar

Unlike the Layout Viewer, where scroll bars are shown only if there are additional images, scroll bars are always displayed in the Stack Viewer window. If not all the cells in an exam are visible, you can use the scroll bar as described below to display additional cells.



Changing Layout

You can change the current layout in the Stack Viewer by dragging the grid lines that separate each cell. The layout you choose will be retained until you change it again.

- When layout is changed, images are automatically enlarged or reduced to the largest size that will fit in their respective cells, unless image scale has been changed manually.
- If you have manually changed the scale of an image, the relative image-to-cell size will be maintained when you change the layout.

To change layout

| To change... | Do this... |
|------------------|--|
| Columns and rows | Point to where two grid lines intersect. When the mouse pointer changes to  , drag the mouse. |
| Columns only | Point to a vertical gridline. When the mouse pointer changes to  , drag the mouse. |

| To change... | Do this... |
|--------------|---|
| Rows only | Point to a horizontal gridline. When the mouse pointer changes to  , drag the mouse. |

Moving Cells

Scout images and stacks can be moved from one cell to another by dragging a cell's title bar. Moving cells can make it easier to compare images in different stacks.

- If you move a cell to a location that is already occupied, the original contents of the 'overwritten' cell are shifted to the right.
- Stacks can be moved while the cine tool is running.

To move cells

- 1 Display the cell you want to move and the location you want to move the cell to (you may need to change the current layout to do so).
- 2 Click the title bar of the cell you want to move. The title bar will turn a lighter shade of gray. To select multiple cells, press the CTRL key while clicking each cell.
- 3 Drag the selected cells to the new location.

Splitting Stacks

Use the split stack feature to divide an existing stack of images into two new stacks. The split stack feature is useful when series information was not included with the exam (preventing the Stack Viewer from splitting the stack automatically), or when you want to separate a group of key images into a new stack.

- Stacks can be split more than once, but new stacks cannot be re-combined manually. If you need to combine split stacks, you will need to close and reopen the exam.
- Image attributes in the original stack (window/level, scale, etc.) will be applied to the new stack.
- A stack cannot be split if the first image in the stack is displayed, or if the stack contains only a single image.

To split a stack

- 1 In the stack you want to split, display the image that you want to be first image in the new stack.

2 Right-click the image, then click Split.

- The displayed image, and any images after the displayed image, will be moved to the first cell on the right.
- If the destination cell is occupied, pre-existing images will also be shifted to the right.

Linking Stacks

Linking lets you work with several stacks at once. Link stacks when you want to navigate through or adjust two or more stacks at the same time.

The link icon, which is displayed near the top of each stack, indicates if stacks are linked or not. When stacks are linked, the link icon looks like . When stacks are not linked, the link icon looks like .

When stacks in the same exam are linked, the Stack Viewer uses the DICOM frame of reference UID to determine the relative positions of all images in linked stacks, and will adjust the displayed image in each stack accordingly.

-  If the stacks you want to link are in different exams (have different frame of reference UIDs), you will need to establish a common starting point for navigational purposes before creating a link. To establish a common starting point, display images located at the same anatomical point in each stack before linking the stacks.

The following steps explain how to link stacks, and how to specify which image attributes are controlled by the links you create.

To link stacks

| To... | Do this... |
|---------------------------|---|
| Link stacks | <ol style="list-style-type: none"> 1 In one of the stacks you want to link, click . The mouse pointer will change to . 2 Click each stack you want to link. As each stack is linked, the  icon in the upper-left corner will change to . <ul style="list-style-type: none"> • When you are finished, right-click once to turn off the link function. • By default, all image attributes are linked once the link is created. |
| Specify linked attributes | <ol style="list-style-type: none"> 1 In a linked stack, click  and drag to open the pull-down menu. Each attribute with a checkmark is currently controlled by the link. 2 To select or deselect an attribute, click it. If all attributes are deselected, the link will only be active for navigation purposes. |

| To... | Do this... |
|---------------|---|
| Unlink stacks | <p>Use either of the following methods:</p> <ul style="list-style-type: none"> • Point to the stack you want to unlink, press down the CTRL key and click . • Open the link pull-down menu in the stack you want to unlink (click  and drag down a short distance with the mouse). Then click Unlink. |

Creating Scout Images

If a scout image is not present in a CT or MR exam, you can use the Stack Viewer to designate a scout.

- To create a meaningful scout, the exam in question must include at least one image that intersects the plane containing the images of interest.
- The create scout feature is disabled if the first image in a stack is displayed, or if the stack contains only a single image.

To create a scout

- 1 Display the image that you want to use as a scout image.
- 2 Right-click the image, then click Create Scout.
 - The current image will remain in its original location, and the Stack Viewer will create slice indicators for the image.
 - The rest of the images will be shifted one cell to the right.

Navigating in a Stack

This section explains how to display images in a stack. It covers:

- [Scrolling through a Stack](#)
- [Using Slice Indicators](#)
- [Using the Cine Tool](#)

Scrolling through a Stack

You can display different images in a stack by clicking or dragging with the middle mouse button, or by using the mouse scroll wheel, if your mouse has one. Detailed steps are in the following table. You can also use the cine tool, which is described on page [53](#).

-  If you do not have a 3-button mouse, you can perform the steps below by pressing the CTRL key and using the right mouse button.

To scroll through images

| To display... | Do this... |
|-----------------------------|---|
| The next image | Using the middle mouse button or scroll wheel, click the right side of the current image. The next image will be displayed. |
| The previous image | Using the middle mouse button or scroll wheel, click the left side of the current image. The previous image will be displayed. |
| Scroll forward and backward | Using the middle mouse button, drag right (or down) to move towards the end of the stack, or drag left (or up) to move towards the beginning of the stack. If your mouse has a scroll wheel, roll the scroll wheel forwards to move towards the front of a stack, or backwards to move towards the end of the stack. |
| A specific image in a stack | In the scout image associated with the current stack, click the part of the scout image that corresponds to the image you want to display. <ul style="list-style-type: none"> You do not have to click a scout indicator. The image closest to the position you clicked on will be displayed. For more information about slice indicators, refer to the next section. |

Using Slice Indicators

In the Stack Viewer, when a CT or MR exam includes scout images, the position of each cross-sectional image in the exam is shown as a slice indicator on the scout image.

Indicators for the first, last, and currently displayed image are highlighted. If a range has been defined with the cine tool, indicators for the first and last images in the range are highlighted, rather than the first or last images in a series.

You can use slice indicators to display a particular image in a stack by clicking an indicator. You also specify intervals for slice indicators, or hide all indicators, as described below.

To control the display of indicators

In the upper left corner of the scout image, click  and drag to open the pull-down menu. Click on the interval you would like to use.

- Indicators for the first, last, and currently displayed image are always displayed.
- You can switch between displaying all indicators or the last selected interval by clicking .
- The settings you choose will be retained until you change them again. These settings are stored on a workstation-by-workstation basis.

Using the Cine Tool

Use the cine tool when you want to rapidly display each image in a stack in a repeating sequence, creating a ‘flipbook’ effect.

The cine tool can be started and stopped using the cine icon ► (or ■), located in the upper left corner of any cell that contains a stack. Other cine functions such as speed and direction can be accessed from the cine pull-down menu.

To use the cine tool

| To... | Do this... |
|-------------------------------|---|
| Start the cine tool | <p>Click ►.</p> <ul style="list-style-type: none"> You can set cine speed or direction, or change window/level, scale, etc., in the stack while the cine is running. By default, the cine tool will display each image in the stack. If you have defined a range, the cine tool will display only images in that range. |
| Stop the cine tool | Click ■. |
| Set the cine speed | <ol style="list-style-type: none"> Open the cine pull-down menu by clicking ► (or ■) and dragging down a short distance with the mouse. Point to Speed, then click one of the three options. <ul style="list-style-type: none"> The speed you choose will be retained until you change it again. Any linked stacks will be affected as well. |
| Set the cine direction | <ol style="list-style-type: none"> Open the cine pull-down menu by clicking ► (or ■) and dragging down a short distance with the mouse. Point to Direction, then click Loop Forward, Loop Reverse, or Yoyo. <ul style="list-style-type: none"> The speed you choose will be retained until you change it again. Any linked stacks will be affected as well. |
| Define a different cine range | <ol style="list-style-type: none"> Display the image that you want to be the first image in the cine range. Open the cine pull-down menu by clicking ► (or ■) and dragging a short distance with the mouse. Then point to Range, then click First Cine Image. Display the image that you want to be the last image in the range. Open the cine pull-down menu by clicking ► (or ■) and dragging a short distance with the mouse. Then point to Range, then click Last Cine Image. |
| Reset the range | Open the cine pull-down menu by clicking ► (or ■) and dragging a short distance with the mouse. Then point to Range, then click Reset. |

Adjusting Images

This section explains how to adjust images displayed in the Stack Viewer. It covers:

- [Changing Image Attributes](#)
- [Changing Single Images](#)
- [Using Image Presets](#)
- [Copying Attributes](#)

Changing Image Attributes

You can change:

- Position in cell (pan)
- Window/level
- Scale
- Sharpness/smoothness
- Inversion
- Orientation

If images in a linked stack are adjusted, attributes in other linked stacks may be adjusted as well. For more information, see page [50](#).

To change image attributes

-  Any active tool can be turned off by right-clicking once. However, you do not have to turn off one tool before switching to another tool.

| To... | Do this... |
|-----------------------|---|
| Pan | <ol style="list-style-type: none"> 1 Confirm that no other tools are active (if the pointer does not look like , right-click once). 2 Point to an image, then drag the mouse. |
| Change window/level | <ol style="list-style-type: none"> 1 Right-click an image and click Window/Level; or, in the Stack Viewer toolbar, click . The mouse pointer will change to . 2 Point to the image you want to change, then drag the mouse. <ul style="list-style-type: none"> • Drag up and down to change window. • Drag left and right to change level. |
| Use Auto window/level | <ol style="list-style-type: none"> 1 In the Stack Viewer toolbar, click . The mouse pointer will change to . 2 Point to the image you want to change. 3 Drag the mouse to define the area that you want to base window/level on. When you release the mouse button, the new values will be applied automatically to the rest of the image. |

| To... | Do this... |
|-----------------------------|---|
| Change scale | <ol style="list-style-type: none"> 1 Right-click an image and click Scale; or, in the Stack Viewer toolbar, click . The mouse pointer will change to . 2 Point to the image you want to change, then drag the mouse. <ul style="list-style-type: none"> • Drag up or left to magnify. • Drag down or right to reduce. |
| Change sharpness/smoothness | <ol style="list-style-type: none"> 1 Right-click an image and click Sharpen; or, in the Stack Viewer toolbar, click . The mouse pointer will change to . 2 Point to the image you want to change, then drag the mouse. <ul style="list-style-type: none"> • Drag up or left to sharpen. • Drag down or right to smooth. |
| Invert a stack | <ol style="list-style-type: none"> 1 In the Stack Viewer toolbar, click , or right-click an image and click Invert. The mouse pointer will change to . 2 Click each image you want to invert. Clicking again will return the image to its original state. |
| Flip a stack 180° | <p>In the Stack Viewer toolbar, click .</p> <ul style="list-style-type: none"> • To flip an image vertically, point near the top of the image. When the pointer looks like , click to flip the image. • To flip an image horizontally, point near the bottom of the image. When the pointer looks like , click to flip the image. |
| Rotate a stack 90° | <p>In the Stack Viewer toolbar, click .</p> <ul style="list-style-type: none"> • To rotate an image clockwise, point near the left side of the image. When the pointer looks like , click to rotate the image. • To rotate an image counterclockwise, point near the right side of the image. When the pointer looks like , click to rotate the image. |

Changing Single Images

By default, when you adjust the displayed image in a stack, the rest of the images in the stack are adjusted as well. If you want to adjust a particular image without affecting the rest of the stack, use the steps below.

| To... | Do this... |
|--|---|
| Make changes apply to only the displayed image | In the upper left corner of the stack, click  , drag to open the pull-down menu, then click Manual Update Stack. |

| To... | Do this... |
|---|---|
| Apply changes made to a single image to the rest of the stack | <ol style="list-style-type: none"> 1 Display the image that you want to propagate the properties of. 2 In the upper left corner of the stack, click , drag to open the pull-down menu, then click Auto Update Stack. <ul style="list-style-type: none"> • The rest of the images in the stack will be adjusted to match the displayed image. • Subsequent changes will affect the entire stack. |

Using Image Presets

Image presets, which are defined in the Layout Viewer, can be applied to CT exams displayed in the Stack Viewer.

To use image presets

- To review the parameters in a preset before applying them, click  to display the Layout Viewer. In the Layout Viewer menu bar, click Settings, then click Image Presets. When you are finished, click Cancel to close the dialog, and click  to return to the Stack Viewer.
- To apply image presets, right-click the stack that you want to apply the preset to, point to Image Preset, then click an option.

 Case presets do not affect exams displayed in the Stack Viewer.

Copying Attributes

The following attributes can be copied from one stack of images to another:

- Window/level
- Scale
- Sharpness/smoothness
- Orientation
- Position in cell (pan)

Typically, all images in a stack will be affected when attributes are copied from one stack to another. However, if the Manual Update option for the destination stack is active, only the currently displayed image will be affected. For more information about Manual Update, see page [55](#).

To copy stack attributes

| To... | Do this... |
|----------------------------------|---|
| Specify which attributes to copy | <ol style="list-style-type: none"> 1 Click  and drag to open the pull-down menu. Each attribute with a checkmark next to it will be copied. 2 To select or deselect an attribute, click it. The settings you choose will be retained until you change them again. These settings are stored on a workstation-by-workstation basis. |
| Copy attributes | <ol style="list-style-type: none"> 1 In the cell containing the attributes that you want to copy, click . 2 Click each cell containing a stack or scout image that you want to copy the attributes to. 3 Right-click once when you are finished. |

Other Tools

This section covers:

- [Using ROIs](#)
- [Using Measurement Tools](#)
- [Using the Calibrate Tool](#)
- [Viewing Image Data](#)

Using ROIs

Use ROIs to define an area in an image that can be adjusted independently from the rest of the image. The most typical use of a ROI is as a magnifying glass.

- Each stack can contain a ROI. ROIs cannot be created in scout images.
- Changes initiated inside a ROI will affect only the ROI.
- ROIs in the Stack Viewer are independent of the settings in the Layout Viewer.

To use ROIs

| To... | Do this... |
|--------------|--|
| Create a ROI | Right-click the stack you want to create a ROI in, then click ROI. Once created, a ROI remains visible as different images in a stack are displayed. |

| To... | Do this... |
|-------------------------------|---|
| Move a ROI | <ol style="list-style-type: none"> 1 Confirm that the mouse pointer looks like . If it does not, disable any active tools by right-clicking once. 2 Point to the border of the ROI. When the mouse pointer looks like , drag the ROI. <ul style="list-style-type: none"> • An ROI cannot be moved past the boundaries of a stack. • If the edges of the stack are not inside the boundaries of the cell, the stack will pan as the ROI is moved. |
| Change image data in a ROI | <ol style="list-style-type: none"> 1 Right-click inside the ROI, then click one of the following: <ul style="list-style-type: none"> • Window/level • Scale • Sharpen/smooth • Invert 2 After the mouse pointer changes, drag (or click, for Invert) to make your changes. For more detailed steps, refer to page 54. <ul style="list-style-type: none"> • You do not have to remain inside the ROI after you begin dragging. • When you are finished, right-click once to turn off the active tool. |
| Resizing a ROI | Point to one of the handles that appear on the edges of the ROI. When the pointer looks like  , drag to resize the ROI. |
| Hide image data outside a ROI | Right-click inside the ROI, then click Shutter. Repeat to reveal the image data. |
| Delete a ROI | ROIs are deleted automatically when an exam is closed. You can also delete a ROI by right-clicking inside the ROI, then clicking Delete. |

Using Measurement Tools

The Stack Viewer provides tools for measuring lengths, angles, areas, and Hounsfield units.

- If you are measuring a small area in an image, you can increase the scale of the image to place your measurement more precisely.
- The units of measurement used (in., cm, or mm) are inherited from the Measurement Settings tab in the Layout Viewer. For more information, see page [36](#).
- If you add a measurement to an image that contains hidden measurements, all the measurements will be displayed.
- Measurement tools do not work in ROIs.

To measure length

1 In the Stack Viewer toolbar, click ; or, right-click an image, point to Measure, then point to Length. The mouse pointer will change to .

 If the mouse pointer changes to , you will need to specify a pixel size before creating a measurement. For more information, see page [60](#).

2 If it is not visible already, display the image containing the feature you want to measure.

3 Point to the part of the image you want to begin measuring from.

4 Drag the mouse to create the measurement line. When you are finished dragging, a label will appear next to the line, displaying the measurement.

5 Continue drawing measurement lines, or right-click once to turn off the tool.

- To hide measurements in a stack, right-click the measurement and click Hide Measurements, or right-click anywhere in the stack, point to Show/Hide, then click Measurements
- Measurements are deleted automatically when an exam is closed. You can also delete a measurement by right-clicking the measurement and clicking Delete.

To measure angles

1 In the Stack Viewer toolbar, click ; or, right-click an image, point to Measure, then point to Length. The mouse pointer will change to .

 Angles can be measured without establishing a measurement standard, even if the calibrate tool appears.

 Unlike the Layout Viewer, the length of the lines that make up an angle are not displayed.

2 If it is not visible already, display the image containing the feature you want to measure.

3 Drag the mouse to create two lines that correspond to the angle you want to measure. When you are finished dragging, a label will appear next to the angle, displaying the measurement.

- The start point of the first line will be treated as the vertex of the angle.
- The lines should be drawn from the vertex out.
- The two lines do not have to meet.

- 4 Continue drawing angles, or right-click once to turn off the tool.
 - To hide measurements in a stack, right-click the measurement and click Hide Measurements, or right-click anywhere in the stack, point to Show/Hide, then click Measurements.
 - Measurements are deleted automatically when an exam is closed. You can also delete a measurement by right-clicking the measurement and clicking Delete.

To measure areas or Hounsfield units

- 1 In the Stack Viewer toolbar, click , or, right-click an image, point to Measure, then point to Hounsfield . The mouse pointer will change to .
-  If the mouse pointer changes to , you will need to specify a pixel size before creating a measurement. For more information, see page [60](#).
- 2 If it is not visible already, display the image containing the feature you want to measure.
- 3 Drag the mouse to create a rectangular area. When you are finished dragging, a label will appear next to the area, displaying Hounsfield average (AV), standard deviation (SD), range (R), and area (AR).
- 4 Continue drawing measurement areas, or right-click once to turn off the tool.
 - To hide measurements in a stack, right-click the measurement and click Hide Measurements, or right-click anywhere in the stack, point to Show/Hide, then click Measurements.
 - Measurements are deleted automatically when an exam is closed. You can also delete a measurement by right-clicking the measurement and clicking Delete.

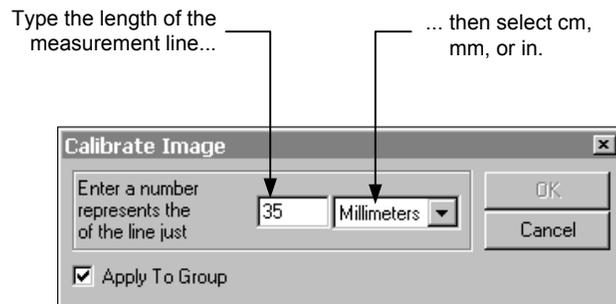
Using the Calibrate Tool

The Stack Viewer's calibrate tool will display automatically if you try to measure a line, an area, or an angle in an exam that does not have an embedded pixel size. You can also open the calibrate tool manually.

-  To use the calibrate tool, the image must contain tick marks or some other visual means of establishing a standard. The accuracy of the calibrate tool is dependent upon the accuracy of the visual guide used in the image.
-  Angles can be measured without establishing a measurement standard, even if the calibrate tool appears.

To use the calibrate tool

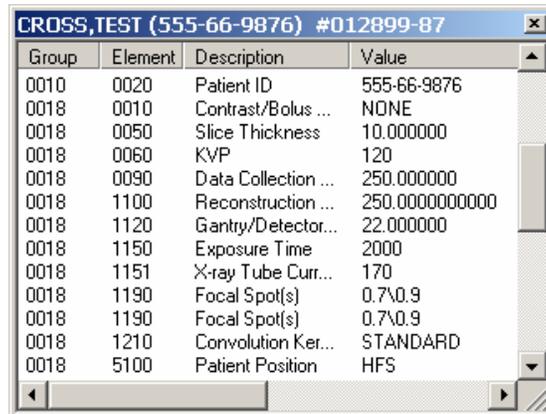
- 1 If it is not already visible, click  and drag down to open the pull-down menu, then click Calibrate. The Calibrate Image dialog will open.
- 2 Point to the stack that that contains the scale you want to use as the basis of your measurements.
 - The mouse pointer will change to .
 - You can scroll or use slice lines to display a different image if needed. The calibrate tool will be remain active (however, if you adjust image attributes, the calibrate tool will turn off automatically).
- 3 Drag the mouse to draw a line between the two points you want to use to establish your measurement scale. If the line is not placed to your satisfaction, draw a second line. The second line will replace the initial one.
- 4 Specify the length of the line that was drawn, then, depending on the units of measurement used by your embedded measurement indicator, choose millimeters, centimeters, or inches.



- 5 If you want the newly defined pixel size to apply to all images in the exam, select the Apply to Group checkbox.
- 6 Click OK.

Viewing Image Data

You can use the Image Data dialog to display a subset the DICOM attributes associated with an image. To open the Image Data dialog, right-click an occupied cell, then click Image Data. A dialog similar to the one shown below will open. When you are finished, you can close the window by clicking .

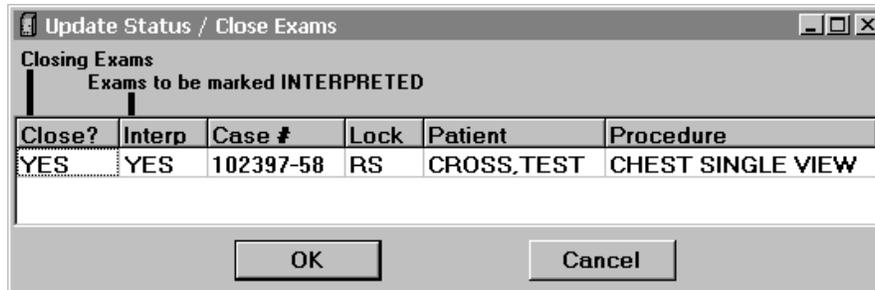


The screenshot shows a dialog box titled "CROSS,TEST (555-66-9876) #012899-87". It contains a table with four columns: Group, Element, Description, and Value. The table lists various DICOM attributes and their corresponding values.

| Group | Element | Description | Value |
|-------|---------|---------------------|----------------|
| 0010 | 0020 | Patient ID | 555-66-9876 |
| 0018 | 0010 | Contrast/Bolus ... | NONE |
| 0018 | 0050 | Slice Thickness | 10.000000 |
| 0018 | 0060 | KVP | 120 |
| 0018 | 0090 | Data Collection ... | 250.000000 |
| 0018 | 1100 | Reconstruction ... | 250.0000000000 |
| 0018 | 1120 | Gantry/Detector... | 22.000000 |
| 0018 | 1150 | Exposure Time | 2000 |
| 0018 | 1151 | X-ray Tube Curr... | 170 |
| 0018 | 1190 | Focal Spot(s) | 0.7\0.9 |
| 0018 | 1190 | Focal Spot(s) | 0.7\0.9 |
| 0018 | 1210 | Convolution Ker... | STANDARD |
| 0018 | 5100 | Patient Position | HFS |

Closing Exams & Updating Exam Status

Use the Update Status/Close Exams window to close exams, and to update the status of a locked exam from EXAMINED to INTERPRETED. When the Update Status/Close Exams window is displayed, it will list each exam that is currently open.



The values in the Close and Interp fields determine what will be done with each exam. These fields can be changed by clicking them with the mouse. By default, the values in the Close column will be YES. The values in the Interp column will be YES for locked (unread) exams, or N/A for exams that have already been interpreted.

- When you change an exam's status to INTERPRETED, you are indicating that you have read the exam. Your name will be recorded as the interpreting radiologist in the exam record. Interpreted exams are no longer eligible for inclusion on the UnRead list, and cannot be locked (the exam may still appear in the UnRead list until the list is refreshed).
- If an exam has been locked, closing the exam without changing its status to INTERPRETED will remove the lock. Another user can then lock the exam and update its status.

 Once an exam's status has been changed to INTERPRETED, the exam's status cannot be altered from VistARad. To return the exam to its original status, you will need to have the Interpreting Radiologist entry in the exam record deleted using the Examination Status Entry/Edit option in the Radiology Package.

To use the Update Status/Close Exam window

- 1 Open the Update Status/Close Exam window using one of the following methods:

| From the ... | Do this... |
|-------------------------------------|---|
| Layout Viewer or Stack Viewer | Click  in the Layout Viewer or Stack Viewer toolbar. |

| From the ... | Do this... |
|--------------|---|
| Manager | <ul style="list-style-type: none"> • Right-click any exam in the Opened Exams list, then click Close/Update Exams. • Click File, then click Close/Update Exams. |

- 2 Each open exam will be listed in the window. Click the Close and Interp fields to specify what you want done with each exam.

| To ... | Set Close to... | Set Interp to... |
|--|-----------------|------------------|
| Close an unread exam, and to update its status to INTERPRETED. | YES | YES |
| To close an unread exam without updating its status. | YES | NO |
| To update an unread exam's status and leave the exam open. | NO | YES |
| To close an interpreted exam | YES | n/a |
| To leave an interpreted exam open | NO | n/a |

 For unread exams, the Close and Interp (update status) fields in the Update Status/Close Exams window default to YES.

- 3 Click OK when you have the settings you want, or click Cancel to close the window without affecting any open exams.

 Closing all open exams will close any open reports as well.

Customizing VistARad

This chapter describes the ways VistARad can be customized. This chapter covers the following topics:

- [Customizing the Manager](#)
- [Customizing the Layout Viewer](#)
- [Customizing Presets](#)

Customizing the Manager

You can customize the Manager by:

- [Setting Manager Preferences](#)
- [Changing the Manager's Appearance](#)
- [Setting up the Custom List Button Box](#)

Changes you make to the Manager are associated with your login, and will not affect other users of the workstation.

Setting Manager Preferences

The options in the Preferences dialog control how the Manager responds when you open and close exams. The size of the patient history list is also controlled from the Preferences dialog.

To set Manager preferences

- 1 In the Manager main window, click Options, then click Preferences. The Preferences dialog will open.
- 2 In the Settings tab, click the options that you want to use. Each option is described in the following table:

| Option | Description |
|-----------------------------|---|
| Auto-Open UnRead Exam List | When checked, the UnRead exam list will be opened (or reopened) when you close all exams displayed in the Layout Viewer or Stack Viewer. |
| Auto-Open Patient Exam List | When checked, the Patient exam list will open automatically each time an exam is opened. The Patient list will show any related or prior exams for the current patient. |
| Auto-Open Requisition | When checked, the requisition for the exam being opened will display, provided that the exam being opened can be locked. |

| Option | Description |
|----------------------------------|---|
| Confirm—Opening Exams Twice | When checked, a confirmation notice will display if you try to open an exam already displayed in the Layout Viewer. |
| Enable Series Processing | Controls how multi-series exams are presented in the Layout Viewer. When this option is checked, each series in an exam is shown in a separate group window. <ul style="list-style-type: none"> • If series processing is not implemented at your site, enabling series processing from the Manager will have no affect. • Enabling or disabling series processing will not affect currently displayed exams. • This setting does not affect the Stack Viewer. |
| View Reduced-Resolution Images | When checked, reduced-resolution images, if available, will be displayed when an exam is opened. Use this option when you are using dialup access for preliminary review of images, and you want to reduce the amount of time needed to display images. When this option is active, exams cannot be locked for interpretation. |
| Maximum Patients in History View | Click the arrows or type a number to set the maximum number of patient names you want shown in the patient history list. The patient history list is described in “Reopening Exams” on page 17 . |

- 3 Click OK to apply your changes, or click Cancel to close the dialog without applying any changes.

Changing the Manager’s Appearance

Like many Windows-based programs, the windows in the Manager can be sized and positioned to suit your needs. You can also specify the fonts used in the Manager.

To move and resize windows

When VistARad is installed, all windows associated with the Manager are initially displayed on the leftmost monitor. You can resize and reposition each window as needed.

| To | Do This |
|-----------------|--|
| Move a window | Point to the title bar at the top of the window, then drag the window. |
| Resize a window | Point to an edge or corner of the window you want to resize. When the mouse pointer changes to  , drag the mouse. <ul style="list-style-type: none"> • Drag the corners to change both height and width. • Drag the straight edges of the window to change height or width only. |

| To | Do This |
|--------------------------|--|
| Resize exam list columns | <ul style="list-style-type: none"> Point to the boundary between two column headings. When the pointer changes to , drag to resize the column. Click Options, then click Fit Columns to Text. |

To change fonts used in Manager windows

If the default font used in the Manager is too small, you can change the font to a different typeface, size, or style.

- Determine which windows you want to change.

| To Change | Do This |
|----------------------------|---|
| Main and Exam List windows | From the main window, click Options, then click Font (All Windows). |
| Main window | From the main window, click Options, then click Font (This Window). |
| Exam List window | Open any exam list. Click Options, then click Font. |
| Report window | Open any report. Click File, then click Font. |

- When the Font dialog opens, select the font, size, and style you want to use. Tahoma, Verdana, and Arial Bold are good baseline choices.
- Click OK to apply your changes.

Setting up the Custom List Button Box

If the Custom List buttons are not visible, you can enable them using the steps below. If you need to have a custom list created or changed, contact your Imaging coordinator.

To enable custom list buttons

- In the Manager main window, click Custom Lists, then click Preferences. The Custom Lists tab in the Preferences dialog box will be displayed.
- Select (or clear) the checkbox for each button. You can also click Enable All or Disable All to select or clear all the checkboxes at once.

- 3 Click OK. The Preferences dialog box will close and the Custom List buttons will appear near the Manager window.
 - You can anchor the Custom List button box to any edge of the Manager window by clicking and dragging the top of the box.
 - The Custom List button box can be resized by dragging the edges of the box.

Customizing the Layout Viewer

This section covers the following topics:

- [Setting Layout Viewer Preferences](#)
- [Changing Image Frame Color](#)
- [Changing the Layout Viewer Toolbar](#)

Changes made to Layout Viewer preferences, image frame color, and the Layout Viewer toolbar are stored on a workstation-by-workstation basis. Any changes made by one user will affect all other users at that workstation.

Setting Layout Viewer Preferences

The VistARad Preferences dialog controls general aspects of the Layout Viewer user interface. It contains tabs for Environment, Monitor Layout, and Mouse Configuration.

The settings in each tab are described below.

Environment Tab Controls

- To access the Environment tab, go to the Layout Viewer menu bar, click Settings, then click Environment.
- To change settings, click the options you want to change, then click OK (or click Apply to apply your changes without closing the dialog).

| Option | Description |
|---|--|
| Dynamic Tool Updating <i>(cannot be changed)</i> | Images are continuously updated when changes are made using the Scale or Sharpen/Smooth tool palettes. |
| Show Tool Tips | When checked, a brief description will appear over options, buttons, and other controls when you point at them with the mouse. |
| Convert Color To Gray Scale <i>(cannot be changed)</i> | When checked, color images will be automatically converted to 236-color grayscale images. This option only applies when a palette other than the standard 8-bit (256 color) palette is used. |

| Option | Description |
|--|--|
| Save Settings On Exit (cannot be changed) | When checked, changes to user preferences and tool settings are retained by the Layout Viewer. |
| Center Images On Load (cannot be changed) | When checked, images are centered in an image frame when an exam is opened. |
| Button Size (cannot be changed) | Specifies the button size used in the Layout Viewer toolbar. |

Monitor Layout Tab Controls



The Auto-Detect option should be checked. Other options in this tab should not be changed.

Mouse Configuration Tab Controls

- To access the Mouse Configuration tab, go to the Layout Viewer menu bar, click Settings, then click Mouse Configuration.
- To change settings, click the options you want to change, then click OK (or click Apply to apply your changes without closing the dialog).

| Option | Description |
|---------------------------------|--|
| Mouse Info Location | Controls if and where a tool tip is displayed during window/level, scale, or sharpen/smooth changes performed with the mouse. Affects Layout Viewer only. |
| Right Mouse Function | Determines if window/level, scale, or sharpen/smooth is performed when you drag the mouse using the right mouse button. Affects Layout Viewer only. |
| Mouse Function Sensitivity | Controls the sensitivity of mouse drags when window/level, scale, and sharpness is changed. Use a lower sensitivity when you want more mouse movement to make a change. Use a higher sensitivity when you want less mouse movement to make a change. Affects Layout Viewer only. |
| Reverse Window/Level directions | By default, when the mouse is used to change window/level, dragging up or down will change window width, and dragging left or right will change level (window center). When this option is checked, the directions used to change window/level are reversed. <ul style="list-style-type: none"> Select this option when you want VistARad to duplicate how window/level is changed at a clinical display workstation. When this option is checked, window/level direction is affected in the Stack Viewer as well. |

Changing Image Frame Color

You can chose the color or shade you want used for the frame (border) that appears around a selected image.

To change image frame color

Click Settings, then click Border Highlight Color. After the Color dialog opens, click the box that represents the color you want to use, then click OK.

Changing the Layout Viewer Toolbar

You can change the Layout Viewer toolbar's size, or hide it entirely.

- To show or hide the toolbar, go to the menu bar, click Tool, then click Toolbar.
- To change button size, right-click the toolbar, then click one of the listed sizes.

 Changes to button size affect the Annotation palette as well.

Customizing Presets

This section explains how to create, modify, and delete presets. Because presets are stored on a workstation-by-workstation basis, any changes made by one user will affect all other users at that workstation.

Creating and Changing Presets

Image and case presets can be created and changed using the controls in the Presets dialog.

Before Creating a Preset...

Before you create a preset, determine which type of preset you want to use. The properties controlled by each type of preset are listed in the following table.

| Preset Properties | Image Preset | Case Preset |
|---|--------------|-------------|
| Apply Automatically (based on modality) | N | Y |
| Window/Level (specific value) | Y | Y |
| Auto W/L | Y | Y |
| Use Modality W/L | N | Y |
| Invert | Y | Y |
| Sharpen | Y | Y |

| Preset Properties | Image Preset | Case Preset |
|-------------------|--------------|-------------|
| Scale | N | Y |
| Fit to Size | N | Y |
| Layout | N | Y |

Before Changing a Preset...

Any preset listed in the Presets dialog can be changed as needed.

- Changes to presets will not affect exams that are already displayed.
- Notify any other users of the workstation about the changes you are planning to make. If you need to maintain multiple sets of presets on the same workstation, users' initials can be used to make each set of presets unique.

To create or change an image preset



Changing an image preset that has been used as the basis of a case preset will not affect the case preset.

- 1 Click Settings, then click Image Preset. The Presets dialog will open.
 - If you are creating a new preset, click New Preset in the Image Preset Levels tab. Then type the name of the image preset into the Preset Name box. The name can be up to 20 characters long.
 - If you are changing an existing preset, click the preset you want to change.
- 2 Specify the window/level you want used for the preset.
 - To use auto-adjust to calculate window/level automatically, click the Auto Window/Level box.
 - To enter exact values, click the Window and Level boxes and type the values you want to use.
 - To display window/level in Hounsfield units, select the Show Window/Level In Hounsfield Units checkbox.
- 3 If you want images inverted, click the Invert check box.
- 4 If you want images sharpened, click the Sharpen box and type value from 1 to 5. You can also use the arrows next to the box to select a value.
- 5 To assign a keyboard shortcut to the preset, click the arrow next to the shortcut box and choose an option.

- 6 Click Update Preset to create or change the preset. The values shown at the top of the Presets area will be used to create the preset.
- 7 When you are finished, click OK to close the dialog.

To create or change a case preset

 If you are planning to associate a modality with a case preset, confirm that the modality in question is not already specified for another case preset.

- 1 Click Settings, then click Case Presets. The Presets dialog will open.
 - If you are creating a new preset, click New Preset in the Case Presets tab. Then type the name of the case preset into the Preset Name box. The name can be up to 20 characters long.
 - If you are changing an existing preset, click the preset you want to change.
- 2 Set or import values for window/level, inversion, and sharpness.
 - To set values, click each box to the right of the Preset Name box, then type or use the arrows to set the values that you want to use.
 - To import values from an existing image preset, click the arrow next to the Use Image Preset box and click an option. The values from the image preset will be shown in the Window, Level, Invert, and Sharpen boxes.
 - To display window/level in Hounsfield units, select the Show Window/Level In Hounsfield Units checkbox.

 For information about setting window/level values on an image-by-image basis, see page [73](#).
- 3 Set the scale you want used.
 - To set an exact scale, which will be used regardless of the size of the image frame, click the Scale box, then type or use the arrows to enter a value (1.00 equals 100%).
 - To make the scale of the image dependent on the size of the image frame, select the Fit to Size check box.
- 4 Use the Columns and Rows boxes (located on the left side of the tab) to specify the layout you want used when the exam is opened.
- 5 If you want the preset applied automatically based on an exam's modality, use the Auto-Associate with Modality box to select a modality.
- 6 To assign a keyboard shortcut to the preset, click the arrow next to the shortcut box and choose an option.

- 7 Click Update Preset to create or change the preset. The values shown at the top of the Presets area will be used to create the preset.
- 8 When you are finished, click OK to close the dialog.

Additional Options for Case Presets

The following options can be used in a case preset to make window/level vary from image to image. Each option is available as a checkbox in the Case Preset tab, and can be selected when defining or changing a case preset.

Auto Window/Level

When Auto Window/Level is checked, the Window and Level boxes at the top of the Case Presets tab are disabled, and any values in the boxes are ignored.

The Auto Window/Level check box will be disabled if an image preset is imported using the Use Image Preset box. However, if an image preset has auto window/level specified as part of its own definition, the image preset's auto window/level setting will be carried over when it is imported into a case preset.

Window/Level from Modalities

If you decide to use the Use Modality Window/Level option, you will need to specify a backup window/level setting to be used if there are no modality-based values available. You can use auto-window level, select an image preset, or set values with the Window and Level boxes.

Deleting Presets

The following factors should be considered before a preset is deleted:

- If you are deleting a case preset that is associated with a particular modality, decide how exams acquired by that modality should be treated when they are opened in the future. You can associate a different preset with the modality in question, or allow the Default preset to be used.
- If you are deleting an image preset that was imported into a case preset at some point, the case preset will not be affected.

To delete image or case presets

- 1 Click Settings. Then click Case Presets or Image Presets.
- 2 In the list of presets, click the preset you want to delete.
- 3 Confirm that the preset you want to delete is shown above the presets list, then click Remove Preset.
- 4 Click Yes to confirm the deletion. Then click OK to close the dialog.

Troubleshooting

Problems with Exam Lists

Exam list does not display properly

If an exam list is minimized manually (by clicking ), it may not display properly the next time you attempt to open an exam list. If this happens, go to lower left corner of the leftmost monitor, where a minimized version of the exam list is located, and click  to restore the exam list.

The exam you want to open should be in the UnRead list, but isn't.

- Refresh the UnRead list by clicking UnRead in the Manager main window.
- Try to locate the exam using Patient Lookup.
- Contact the technologist that acquired the exam and confirm that the exam has been case edited.

"No Exams Found — Patient has more exams on file." message is displayed

There are exams for the selected patient, but they are too old to be included in the Patient Exams list. To open the All Patient Exams list for the selected patient, click OK to close the message box. Then, in the empty Patient Exams window, click All Patient Exams.

Problems Opening Exams

"Severe Alert!" message is displayed

VistARad has detected a discrepancy between the information in the exam and in the associated patient records or images. Record the information in the message and report the problem to your Imaging Coordinator immediately.

An exam takes a long time to open

The time needed to display an exam is dependent on network traffic, number of images in the exam, and the size of each image.

- In the Layout Viewer, you can interrupt the process of loading exams by clicking , located in the Layout Viewer toolbar or by pressing the ESC (Escape) key.
- In the Stack Viewer, you can interrupt the process by clicking the Stop button in the dialog that appears when exams are being loaded.

Problems Working with Images

Image display quality is poor

Image display quality is dependent on a number of factors. If you encounter problems, display several exams from different modalities. Try to determine if image quality problems are related to the monitors, the source modality, or a specific exam. If you are experiencing display problems for all exams, contact your local Imaging support person and find out when the monitors were last calibrated. If your display problems are specific to exams displayed in the Layout Viewer, confirm that your case presets are defined as expected.

Scale or sharpen changes not initially applied to entire image

In the Layout Viewer, when the mouse is used to change the scale or sharpness settings for images larger than 1MB (typically, CR or DR images), only a portion of the image will be updated as the mouse is being dragged. When the mouse button is released, the change will be applied to the rest of the image.

Clicking or dragging does not have expected results

If the mouse does not respond as expected, right-click the current image. This will disable any active tools and restore the default behavior of the left mouse button.

Measurements drawn in the Layout Viewer are "invisible"

If you attempt to draw a measurement object in the Layout Viewer, and it does not appear, right-click the image, click Show/Hide, and confirm that the Measurements option is selected.

Glossary

The following terms are used in this manual:

archive: In *VISTA*, the collection of servers used for the short- and long-term storage of images. When images are acquired, they are placed in short-term storage for a site defined period of time. Images are held in long-term storage indefinitely. Archived images are managed by the *VISTA* Imaging Background Processor.

cell: In the Stack viewer, the area in which a scout or stack of images is displayed. The size of a cell is based on the current layout and on the size of the Stack Viewer window.

cell title bar: In the Stack Viewer, the gray bar that appears at the top of an occupied cell when a cell contains images. The cell title bar contains the patient name, patient ID, and exam ID.

cine: In the Stack Viewer, the feature that allows each image in a stack to be displayed in rapid succession, creating a flipbook effect.

consolidation site: A site that shares a *VISTA* HIS with one or more additional sites.

DICOM Image Gateway: A *VISTA* Imaging device that receives images from a modality, ensures that the images are properly linked to a patient's record, and sends the images to the archive.

grid lines: In the Stack Viewer, the horizontal and vertical lines that separate each cell.

group window: In the Layout Viewer, the window used to contain either a single exam or a single series in an exam. Up to eight group windows can be open at once.

HIS: Hospital Information System. The system used by a hospital to manage information processing and storage. See *VISTA*.

image frame: In the Layout Viewer, an area in a group window used to display a single image. The size of an image frame is dependent upon the current layout.

Imaging Coordinator: The individual responsible for the operation and maintenance of the *VISTA* Imaging system.

layout: In the Layout Viewer, the number of images displayed on a single monitor. In the Stack Viewer, the number of images that can be displayed at once in the Stack Viewer window. Layout can be expressed as a single number (20-up) or as two numbers (4 × 5).

Layout Viewer: In VistARad, the component used to display exams and manipulate image data.

lock: In VistARad, locks are used to prevent more than one person from interpreting the same exam. If a user attempts to open a locked exam, they will be notified that it is locked.

Manager: In VistARad, the component that provides an interface to the *VISTA* HIS. The Manager allows users to select exams and reports for display, and provides the means to update an exam's status to INTERPRETED.

mouse mode: In the Layout Viewer, mouse mode is used when you want to temporarily assign window/level, scale, or sharpen/smooth control to the left mouse button. See also **tool mode**.

pull-down menu: In the Stack Viewer, the menu that appears when you click and "pull down" (drag) one of the icons that are in the scout and stack toolbars.

Radiology Package: A *VISTA* component used to process imaging examinations. Among other things, a Radiology workstation is used to enter and edit examination records.

ROI (or Region of Interest): In VistARad, a tool used to define an area in an image that can be manipulated independently from the rest of the image. A ROI is most frequently used as a virtual magnifying glass.

server: See **Manager**.

stack: In the Stack Viewer, the group of images contained in a single cell. Usually, but not always, a stack contains one series.

Stack Viewer: In VistARad, the component used to display CT, MR, or XA exams.

tool mode: In the Layout Viewer, tool mode is used to make window/level, scale, and sharpen/smooth tool palettes accessible from the Layout Viewer toolbar or image shortcut menu. See also **mouse mode**.

VISTA Imaging: A system composed of applications used to capture, integrate, display, and archive clinical images. VistARad is one of several Imaging components.

VISTA: The Veterans' Health Information Systems Technology and Architecture. Generally, the group of applications used for day-to-day operations at VA healthcare facilities. *VISTA* includes the Hospital Information System (HIS) that stores VHA clinical data.

window/level: In VistARad, used to collectively refer to window width and window center (level). May appear as W/L where space is at a premium.

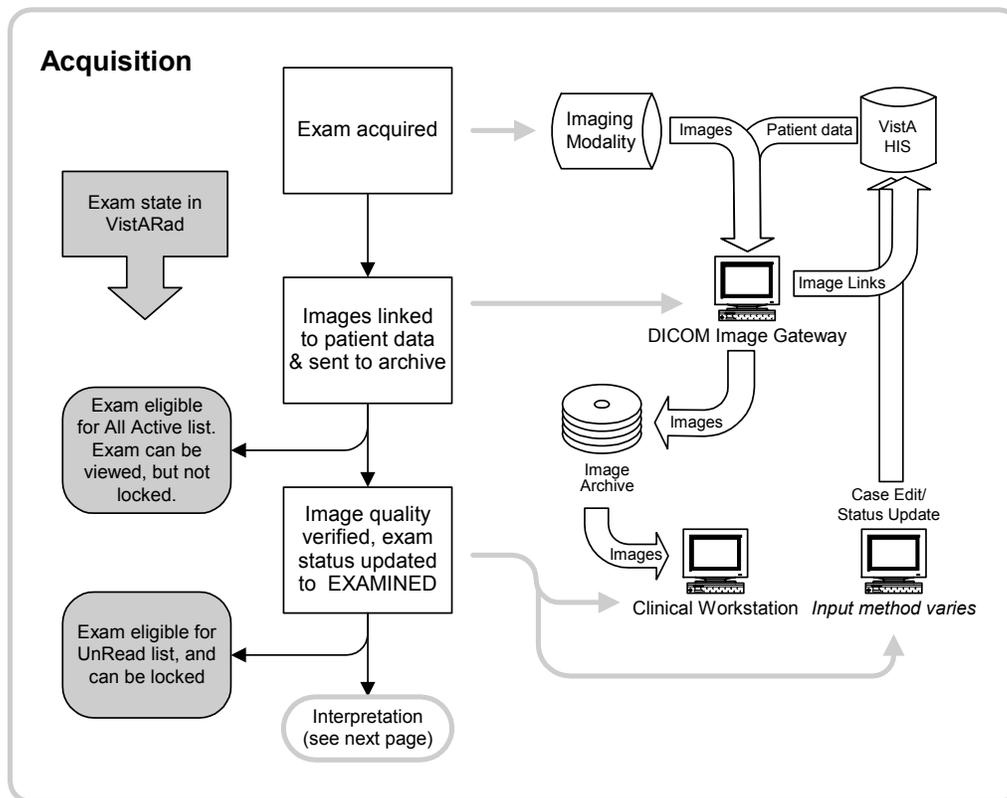
Appendix A: VistARad's Place in Imaging

This section describes how an exam progresses through the **VISTA** Imaging system, and explains how an exam's state is reflected in VistARad as the exam is acquired, processed, and interpreted.

Acquisition & Verification

New exams are sent from the acquisition modality to a DICOM Image Gateway. The Image Gateway links images in the exam to a patient record in the **VISTA** HIS, and sends the images to the archive.

After the images are stored, a technologist uses a clinical workstation to check image quality and to verify that the images are linked to the correct patient record. Exams have a status of **WAITING** (or **CALLED FOR**) until the technologist verifies the exam, updating the exam status to **EXAMINED** (performs a case edit). At this stage, the technologist can also add any comments concerning the exam to the patient's permanent electronic record.

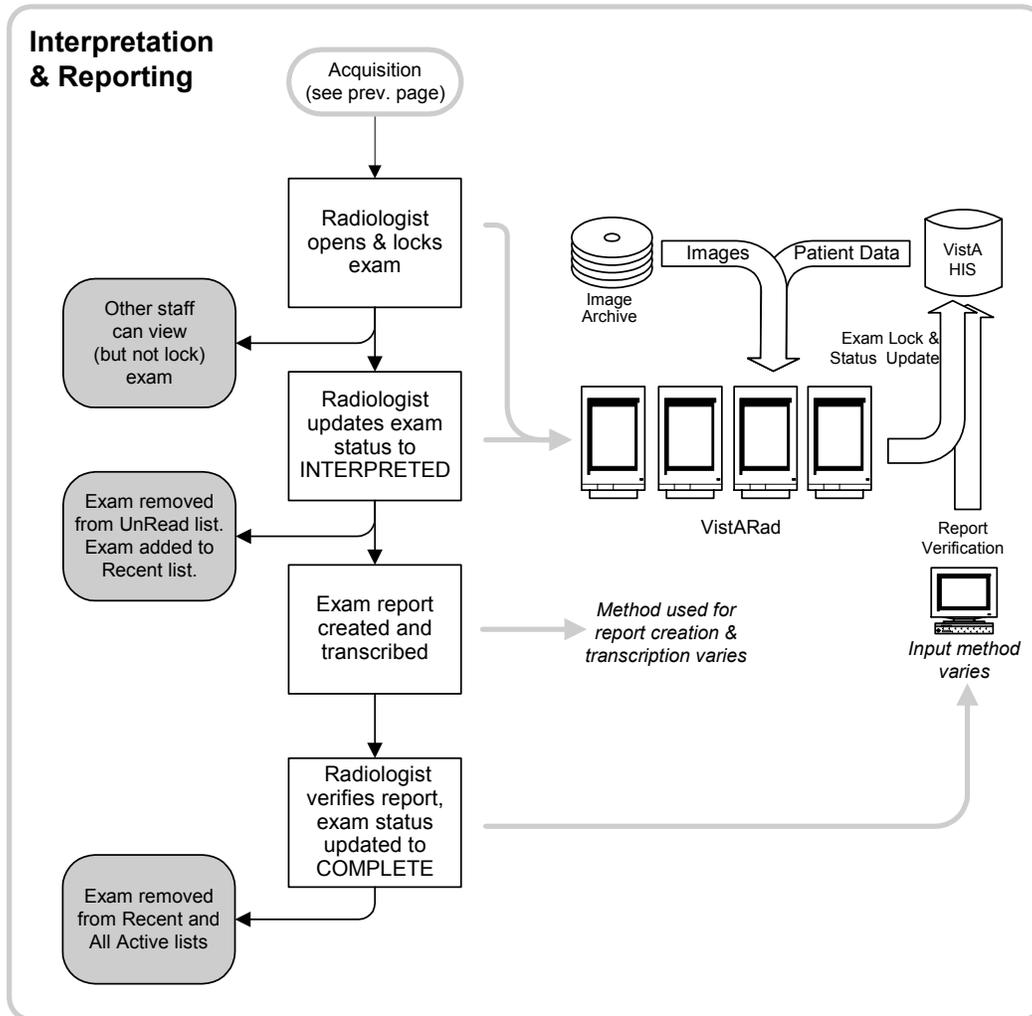


Interpretation & Reporting

To interpret an exam, a radiologist uses one of VistARad's exam lists, which are derived from the VISTA HIS, to select an exam for display. A copy of the selected exam is stored in VistARad's local memory while the radiologist reviews the images.

After a radiologist uses VistARad to update an exam's status to INTERPRETED, a report is generated and transcribed outside of VistARad (method varies from site to site). The radiologist then verifies the report using a workstation with a connection to the VISTA HIS. The act of verifying a report updates the exam's status to COMPLETE.

Archived exams are held in short-term storage for a site-defined period of time. When that time period has elapsed, images are purged from short-term storage. Images are held in long-term storage indefinitely.



Appendix B: Keyboard Shortcuts

Keyboard shortcuts for the Layout Viewer, the Manager, and exam lists are described below.

Layout Viewer Shortcuts

| | |
|----------|--|
| Ctrl+F2 | Add a ROI rectangle. |
| Ctrl+F3 | Add a ROI ellipse. |
| Ctrl+F5 | Add a measurement rectangle. |
| Ctrl+F6 | Shift between group windows. |
| Ctrl+F7 | Add an annotation rectangle. |
| Ctrl+F8 | Add an annotation ellipse. |
| Ctrl+F9 | Add an annotation line. |
| Ctrl+F11 | Add a measurement line. |
| Ctrl+F12 | Add an annotation text box. |
| Ctrl+D | Display or hide the data overlay. |
| Ctrl+E | Show or hide the Annotation palette. |
| Ctrl+I | Show or hide the Pixel Information tool. |
| Ctrl+L | Show or hide the Scale tool. |
| Ctrl+N | Show or hide the Pan/Scroll tool. |
| Ctrl+Q | Opens the Close Exam/Update Status window. |
| Ctrl+R | Show or hide the Sharpen/Smooth tool. |
| Ctrl+W | Show or hide the Window./Level tool. |

Manager Shortcuts

| | |
|-------|---|
| Alt+A | Opens All Active exam list. |
| Alt+C | Opens the Recent exam list. |
| Alt+E | Opens the Patient Exams list for patient shown in Last Patient field. |
| Alt+F | Opens the File menu. |
| Alt+H | Opens the Help menu. |
| Alt+L | Opens the Patient Lookup window. |
| Alt+O | Opens the Options menu. |
| Alt+P | Opens the Patient Profile report for selected patient. |
| Alt+S | Opens the VistA Patient (Health Summary) Reports window. |
| Alt+U | Opens the UnRead exam list. |
| Alt+V | Opens the View menu. |

Exam List Shortcuts

| | |
|-------|---|
| Alt+A | Opens the All Patient Exams list for highlighted patient. |
| Alt+C | Closes the currently open exam list. |
| Alt+F | Opens the File menu. |
| Alt+M | Opens the All Patient Exams list for selected patient. |
| Alt+O | Opens the selected exam. |
| Alt+P | Opens the Patient Exams list for selected patient. |
| Alt+Q | Opens the Requisition for highlighted exam. |
| Alt+R | Opens the report for highlighted exam. |
| Alt+V | Opens the View menu. |

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