

# McKesson Radiology™



## **McKesson Radiology™ Disc Advanced Viewer User's Guide**

Release 12.1.1

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Revision 2

**Rx ONLY**

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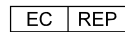
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## About this document

This section provides information to help you understand the McKesson Radiology™ Disc Advanced Viewer User's Guide and how to most effectively use it.

A McKesson product User's Guide represents the body of knowledge necessary for users to safely and effectively use the medical device.

Any addition, modification, deletion, or abridgement of this information by a party other than McKesson is not warranted by McKesson as a body of knowledge suitable for users to safely and effectively use the medical device.

### Purpose

This document describes the McKesson Radiology™ Disc Advanced Viewer (Advanced Viewer) application and how to use it.

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**Warning!** This user's guide needs to be read as part of the User Documentation Library CD. In particular, this user's guide is complemented by the information provided in the Customer Release Notes and Software Update Notes. The former document type briefly describes a major or minor release provided by McKesson. The latter provides updates identified as a result of the Service Pack (SP) or Expansion Pack (EXP) release. In addition, Hot Fix Notes, which describe the purpose and contents of a hot fix, applied to the McKesson software, may be provided. It is assumed that the end user reads and follows the instructions supplied in the user's guide and the supplementary documentation. To ensure that you are familiar with the product features, enhancements, limitations and software problems resolved in a particular release (major, minor, SP, EXP) please read all the supplied documentation. This includes but is not limited to the following documentation: User's Guides, Customer Release Notes, Software Update Notes, Hot Fix Notes, Icon Cards and Quick Notes. In addition, when you use the software, please use the Help files supplied within the product. Failure to read and follow instructions and to learn the supplementary information may cause the end user to use the software incorrectly, and may result in possible misinterpretation leading to possible misdiagnosis or mistreatment decisions.

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### Audience

This document is written for the Advanced Viewer users who will capture, view and analyze diagnostic medical images. Typically, the users are:

- Technologists
- Radiologists
- Radiology residents
- Referring physicians
- Emergency Department (ED) staff

- 
- Intensive Care Unit (ICU) staff
- 

**Note:** The document does not describe how to use the medical equipment in your facility, or perform medical diagnostic examinations. For this information refer to the relevant manufacturer's manual and internal standard operating procedures

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## Organization

This document contains the following major sections:

- **“Getting started”** describes how to start using Advanced Viewer.
- **“Working with images”** describes how to manipulate images within a study.
- **“Working with series”** describes how to display and view series.
- **“Working with cine clips”** describes how to manipulate cine clips within a study.
- **“Viewing patient information and documents”** describes how to access and view patient and study information, and documents that are related to the study or the associated patient.
- **“Working with display protocols”** describes how to use and manage display protocols.
- **“Setting preferences”** describes how to set preferences for using Advanced Viewer.
- **“Closing studies and exiting”** describes how to close studies and exit Advanced Viewer.
- **“Advanced Viewer work area”** describes the Advanced Viewer work area.
- **“Using shortcuts”** describes the shortcuts in Advanced Viewer.
- **“Glossary”** contains a list of terms and abbreviations used in this document.
- **“Index”** lists the most important concepts described in this document.

## Related documentation

The following table lists the related documents:

Document name	Document ID
McKesson Radiology™ Applications Requirements Guide	2014-29479
McKesson Radiology Station™ User's Guide	2014-29468
McKesson Radiology™ Disc Quick Viewer User's Guide	2014-29482
McKesson Radiology™ Disc Advanced Viewer and Quick Viewer Icon Card	2014-29783
McKesson Radiology™ 12.1.1 Customer Release Notes	2014-29467
McKesson Radiology™ 12.1.1 EXP3 Software Update Notes	2015-32414

## Intended Use for McKesson Radiology™ Disc Advanced Viewer

This software is indicated for viewing of medical images that are exported from a McKesson Radiology™ PACS.

It is intended to be used by qualified healthcare professionals for clinical reference viewing of medical images in an offline environment.

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**Warning:** It is not intended to be used by radiologists for primary interpretation.

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For primary interpretation of the exported images on the removable media, it is expected that radiologists will view the images on a workstation that complies with the applicable regulations in their region or country.

## Prescription device statement

United States law restricts this device to be sold by or on the order of a physician or a properly licensed practitioner.

## Your comments

We welcome your comments about the usability of the McKesson equipment and accompanying manuals. If you have questions or comments regarding this document, please contact the Product Documentation Group at McKesson.

## Service information

For technical support or any service related to McKesson equipment, please call the toll-free telephone number listed on the front or back of this guide.

Standard Coverage may include software support, hardware support and software updates as covered in the Support Maintenance agreement.

If you do call McKesson Support for service, please have this manual handy and be prepared to provide the following information:

- Your name and the name of the facility from which you are calling
- Your return telephone, fax, or pager number
- The system or equipment name on the McKesson label
- A description of the steps leading to the problem

## Notes, cautions, and warnings

This document uses the following internationally accepted conventions in describing information that requires further attention by the user:

Type of additional information	Purpose
Note	Provides neutral or positive information that emphasizes or supplements important points of the main text.

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Type of additional information	Purpose (Continued)
Caution	Advises users of a potentially hazardous situation which, if not avoided or adequate precautions not taken, could result in minor or moderate injury to the user or patient, or potential device damage.
Warning	Advises users of a potentially hazardous situation which, if not avoided or adequate precautions not taken, could result in loss of life or serious injury to the user or patient, and potential device damage.

# Chapter 1 - Getting started

This section describes McKesson Radiology™ Disc Advanced Viewer.

## In this section

This section contains the following topics:

Topic	See page
About the McKesson Radiology™ Disc application	1-2
Starting the Advanced Viewer	1-5
Switching between the viewers	1-9
Troubleshooting the Advanced Viewer	1-10



## About the McKesson Radiology™ Disc application

This section describes the McKesson Radiology™ Disc application.

You can export study images and information from a McKesson Radiology Station™ workstation to a removable media or a folder accessible from another workstation.

You can also send study images and information from a McKesson Radiology Station™ workstation to a third-party disc publishing device that provides automated disc burning and labeling capabilities. This depends on the McKesson Radiology™ configuration at your site.

The McKesson Radiology™ Disc application enables you to display the study images and information on a workstation that cannot access the McKesson Radiology Station™ application.

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**Warning:** Images displayed in McKesson Radiology™ Disc viewer are not intended for primary diagnosis. For details, see “[Intended Use for McKesson Radiology™ Disc Advanced Viewer](#)” on page i-xiii and “[Indication that images are not for diagnosis](#)” on page 2-10.

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## Two types of McKesson Radiology™ Disc viewers

There are two types of McKesson Radiology™ Disc viewers:

- McKesson Radiology™ Disc Quick Viewer (hereafter referred to as Quick Viewer)
- McKesson Radiology™ Disc Advanced Viewer (hereafter referred to as Advanced Viewer)

Both viewers are portable. They may be copied to removable media, such as CDs.

Viewer	Features
Quick Viewer	<p>A Web browser based viewer that allows you to view study images and patient information. It provides the following features:</p> <ul style="list-style-type: none"><li>• View the following items:<ul style="list-style-type: none"><li>- JPEG images</li><li>- Cine clips</li><li>- Reports</li></ul></li><li>• Listen to voice clips</li><li>• Use on any computer with qualified version of Internet Explorer® browser.</li></ul>

Viewer	Features (Continued)
Advanced Viewer	<p>A Windows® based viewer that extends the basic functionality of the Quick Viewer. It provides the following features:</p> <ul style="list-style-type: none"> <li>View the following items: <ul style="list-style-type: none"> <li>DICOM images</li> <li>Cine clips</li> <li>Reports</li> </ul> </li> <li>Listen to voice clips</li> <li>Zoom and pan DICOM images</li> <li>Work with display protocols</li> <li>Modify DICOM images by: <ul style="list-style-type: none"> <li>Adding annotations to a study image</li> <li>Modifying the Window/Level of a study image</li> </ul> </li> </ul> <hr/> <p><b>Caution:</b> Modifications made to study images are discarded when the study is closed.</p> <hr/> <ul style="list-style-type: none"> <li>Set preferences that configure: <ul style="list-style-type: none"> <li>Which icons are displayed on the main toolbar</li> <li>Which options are available when you right-click an image</li> <li>Whether Power Scrolling is enabled</li> </ul> </li> </ul> <hr/> <p><b>Note:</b> Modifications made to preferences are discarded when the Advanced Viewer is closed.</p> <hr/> <ul style="list-style-type: none"> <li>Define user shortcuts (See “Using shortcuts” on page B-1.)</li> <li>Use on any computer that meets the minimum system and software requirements</li> </ul>

## Software and hardware requirements

For the Advanced Viewer software and hardware requirements, refer to the *McKesson Radiology™ Applications Requirements Guide* or contact your system administrator.

## Starting the Advanced Viewer

This section describes how to start the Advanced Viewer.

**Note:** McKesson Radiology™ may not provide multilingual support, depending on its configuration. If multilingual support is not available in your medical institution, follow the relevant instructions that describe how to use the English version of McKesson Radiology™.

### In this section

This section contains the following topics:

Topic	See page
Starting the Advanced Viewer automatically	1-5
Starting the Advanced Viewer manually	1-7
Configuring the Advanced Viewer to start automatically	1-8

## Starting the Advanced Viewer automatically

This section describes how to start the Advanced Viewer automatically. It may be started from these types of removable media:

- Compact Discs (CDs)
- Digital Versatile Discs (DVDs)

### Prerequisites

The Advanced Viewer may be started automatically when you insert the removable media into the appropriate drive on your workstation.

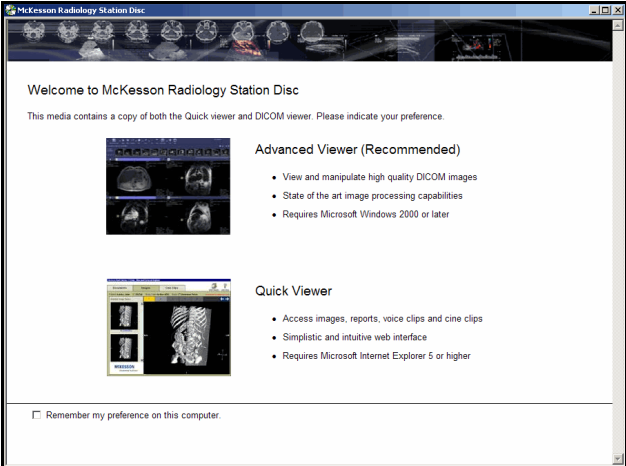
However, your workstation Windows® Registry needs to be preconfigured. The Windows® Registry `autorun` option needs to be properly set. If this is not the case, the viewer included on the removable media may not be started (may not run automatically).

For example, if this option is not set Advanced Viewer may not be started automatically, when you insert a CD into the workstation CD drive. You would need to start this viewer manually. “You cannot start the viewer automatically from removable media” on page 1-12.

## Steps for this task

To start the Advanced Viewer automatically:

- Insert the removable media into the appropriate workstation drive.

If these viewers are included on removable media	Do this...
<ul style="list-style-type: none"> <li>• Advanced Viewer</li> <li>-and-</li> <li>• Quick Viewer</li> </ul>	<p>1 The <b>Welcome to McKesson Radiology Station Disc</b> window is displayed.</p>  <p>2 Click <b>Advanced Viewer (Recommended)</b>. The Advanced Viewer is started, and the Study List or study is displayed. See <a href="#">“Opening studies from the Study List”</a> on page 2-2.</p> <p><b>Note:</b> If a copy of the Advanced Viewer does not exist on your local hard drive, a message is displayed indicating that the viewer is copied to the hard drive, before it is started.</p>
<ul style="list-style-type: none"> <li>• Advanced Viewer</li> </ul>	<ul style="list-style-type: none"> <li>• The Advanced Viewer is started, and the Study List or study is displayed. See <a href="#">“Opening studies from the Study List”</a> on page 2-2.</li> </ul> <p><b>Note:</b> If a copy of the Advanced Viewer does not exist on your local hard drive, a message is displayed indicating that the viewer is copied to the hard drive, before it is started.</p>

## Starting the Advanced Viewer manually

This section describes how to start the Advanced Viewer manually.

### Prerequisites

The Advanced Viewer is started via the file `autorun.bat`. This file is included with the exported Advanced Viewer. Therefore, you need to know the location the viewer was exported to, to access the `autorun.bat` file. See “[Folders and files included with the Advanced Viewer](#)” on page 1-10.

### Steps for this task

To start the Advanced Viewer from a folder:

- 1 Right-click the **Start** button.
- 2 From the menu that is displayed, select **Explore**. The **Windows® Explorer** window is displayed.
- 3 Navigate to the location of the exported Advanced Viewer.
- 4 Double-click the `autorun.bat` file. See “[Starting the Advanced Viewer automatically](#)” on page 1-5.

## Configuring the Advanced Viewer to start automatically

This section describes how to configure the Advanced Viewer to start automatically.

### Steps for this task

To configure the Advanced Viewer to start automatically:

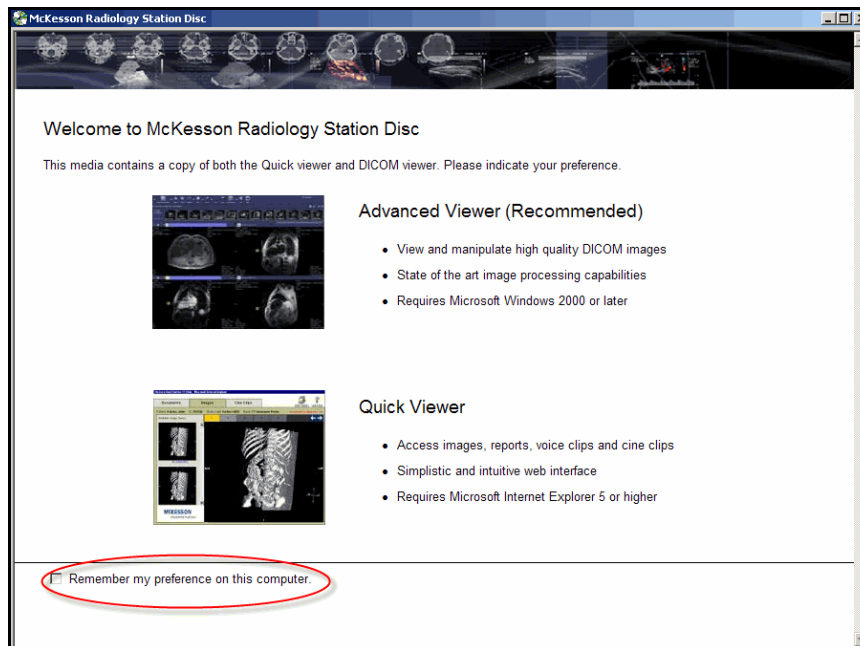
- 1 Depending on whether the viewer is started from a removable media or a folder, perform one of the following steps:

To start the viewer from...	Do this...
Removable media	<ul style="list-style-type: none"> <li>• Insert the removable media into the appropriate workstation drive.</li> </ul>
A folder	<ol style="list-style-type: none"> <li>1 Perform steps 1 to 3 of “To start the Advanced Viewer from a folder:” on page 1-7.</li> <li>2 Double-click the <code>autorun.bat</code> file.</li> </ol>

The **Welcome to McKesson Radiology Station Disc** window is displayed.

- 2 Select the following check box:
  - **Remember my preference on this computer**

Figure 1-1 The Welcome to McKesson Radiology Station Disc window



- 3 Click **Advanced Viewer (Recommended)**. The Advanced Viewer now starts automatically.



## Switching between the viewers

You may start the Quick Viewer from the Advanced Viewer, if both viewers were exported with the study images and patient documentation.

### Steps for this task

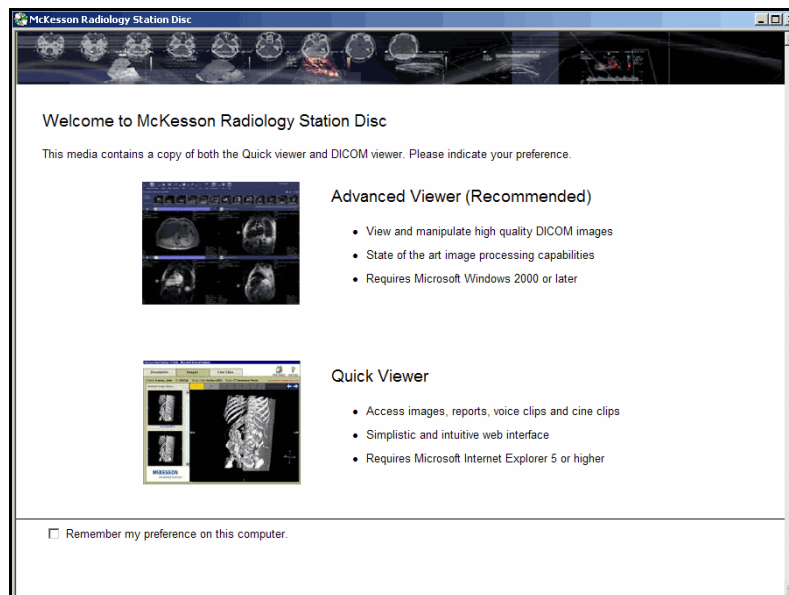
To switch to the between the viewers (if the Advanced Viewer is the current viewer):

- 1 Click the **Return** icon on the main toolbar.



The Advanced Viewer and any open studies are closed. The **Welcome to McKesson Radiology Station Disc** window is displayed.

Figure 1-2 The Welcome to McKesson Radiology Station Disc window



- 2 Click **Quick Viewer**. The Quick Viewer is started and the Study List is displayed.

**Note:** If the removable media, or folder, contains only one study, the study is automatically displayed, instead of the Study List. See [“Opening studies from the Study List”](#) on page 2-2.

# Troubleshooting the Advanced Viewer

This section describes how to troubleshoot the Advanced Viewer.

## In this section

This section contains the following topics:

Topic	See page
<a href="#">Folders and files included with the Advanced Viewer</a>	<a href="#">1-10</a>
<a href="#">Wrong viewer is started</a>	<a href="#">1-12</a>
<a href="#">You cannot start the viewer automatically from removable media</a>	<a href="#">1-12</a>
<a href="#">You cannot manually start the Advanced Viewer</a>	<a href="#">1-14</a>
<a href="#">Opening Online Help</a>	<a href="#">1-14</a>

## Folders and files included with the Advanced Viewer

This section describes the files and folders included with the Advanced Viewer:

File or folder name	Type	Details
data	Folder	<ul style="list-style-type: none"> <li>Contains the images and patient documentation that may belong to one or more patient studies. It also contains the Advanced Viewer software.</li> </ul>
autorun.inf	File	<ul style="list-style-type: none"> <li>Instructs the Microsoft® Windows® operating system how to display the content on the media when the media is inserted into the computer.</li> <li>Directs the OS to run the <code>autorun.bat</code> file.</li> </ul>
autorun.bat	File	<ul style="list-style-type: none"> <li>Starts the Advanced Viewer.</li> <li>May be used to manually start the Advanced Viewer. See <a href="#">“Starting the Advanced Viewer manually”</a> on page 1-7.</li> </ul>
CommonLaunch.bat	File	<ul style="list-style-type: none"> <li>Displays the McKesson Radiology™ Disc window.</li> <li>Enables you to reset the viewer configured to start automatically. See <a href="#">“Wrong viewer is started”</a> on page 1-12.</li> </ul>

File or folder name	Type	Details (Continued)
repair.bat	File	<ul style="list-style-type: none"><li>Repairs the copy of the Advanced Viewer on your local hard drive. See “<a href="#">You cannot manually start the Advanced Viewer</a>” on page 1-14.</li></ul>
DiskView.htm	File	<ul style="list-style-type: none"><li>A Web page used by the Advanced Viewer.</li></ul>
QuickViewer.txt	File	<ul style="list-style-type: none"><li>Included whenever the Quick Viewer is exported.</li></ul>
AdvancedViewer.txt	File	<ul style="list-style-type: none"><li>Included only if the Advanced Viewer is exported.</li></ul>
DICOMDIR	File	<ul style="list-style-type: none"><li>Describes the DICOM files included in the study.</li><li>Included only if the Advanced Viewer is exported.</li></ul>
Readme1st_Files	Folder	<ul style="list-style-type: none"><li>Not used, and may not be copied to the media or folder.</li></ul>

## Wrong viewer is started

If both viewers are included with the study images and patient documentation, you may configure one of the viewers to start automatically. See “[Configuring the Advanced Viewer to start automatically](#)” on page 1-8.

If you need to start the other viewer, you need to reset this preferred viewer configuration.

For example, currently the Advanced Viewer is your preferred viewer. However, you want to start the Quick Viewer.

### Steps for this task

To reset the viewer configured to start automatically:

- 1 Start the McKesson Radiology™ Disc application.

To start the viewer...	Do this...
Automatically	<ol style="list-style-type: none"><li>1. Insert the removable media into the appropriate workstation drive.</li><li>2. Display all the workstation drives.</li><li>3. Right-click the drive on your workstation that corresponds to the media you inserted.  For example, if you inserted a CD, right-click the CD drive on your workstation.</li><li>4. From the menu that is displayed, select <b>Explore</b>. A window is displayed that lists the contents of the removable media.</li></ol>
Manually	<ul style="list-style-type: none"><li>• Perform steps 1 to 3 of “<a href="#">To start the Advanced Viewer from a folder:</a>” on page 1-7.</li></ul>

- 2 Double-click the `CommonLaunch.bat` file. See “[Folders and files included with the Advanced Viewer](#)” on page 1-10. The **Welcome to McKesson Radiology Station Disc** window is displayed.
- 3 Click the viewer you want to start. The viewer is started and the Study List or study is displayed. See “[Opening studies from the Study List](#)” on page 2-2.

The next time you start the McKesson Radiology™ Disc, you may select which viewer to use.

## You cannot start the viewer automatically from removable media

When you insert the removable media into the appropriate drive, a viewer is started, or you may choose a viewer to start.

However, if your workstation does not recognize the `autorun.inf` file included on the media, no viewer is started and you may not select one to start. See “[Folders and files included with the Advanced Viewer](#)” on page 1-10. In this case, you need to manually start Advanced Viewer.

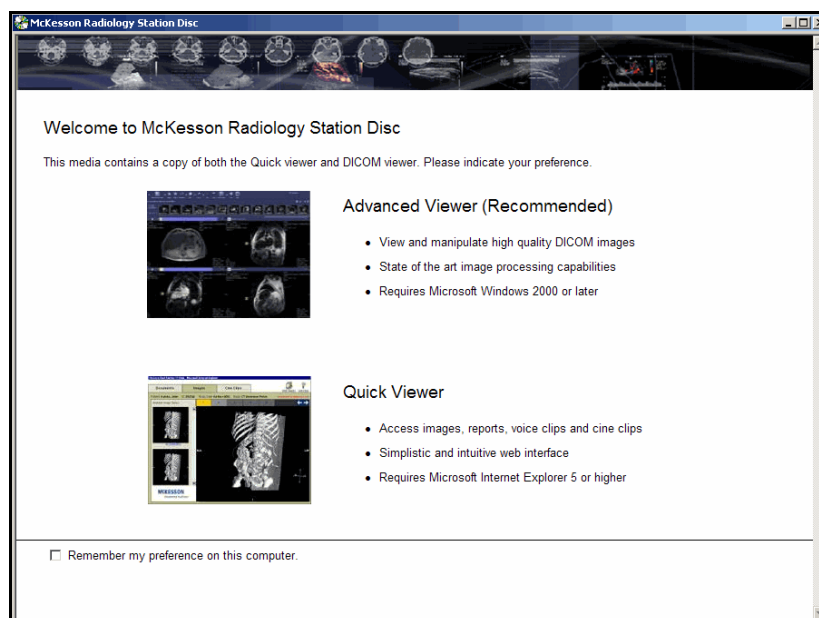
### Steps for this task

To manually start the viewer from a removable media-example workflow (Windows® 7):

- 1 Insert the removable media into the appropriate workstation drive.
- 2 Click **Start**, and then click **Computer**. The **Computer** window is displayed. It lists all the workstation drives.
- 3 Right-click the drive on your workstation that corresponds to the media you inserted. For example, if you inserted a CD, right-click the CD drive on your workstation.
- 4 From the menu that is displayed, select **Install or run program**.

The **Welcome to McKesson Radiology Station Disc** window is displayed.

Figure 1-3 The Welcome to McKesson Radiology Station Disc window



- 5 Click **Advanced Viewer (Recommended)**. The Advanced Viewer starts.

**Note:** If a copy of the Advanced Viewer does not exist on your local hard drive, a message is displayed indicating that the viewer is copied to the hard drive, before it is started.

## You cannot manually start the Advanced Viewer

If the copy of Advanced Viewer copied to your local hard drive is corrupted, it may not be started. In this case, you need to repair your copy of the Advanced Viewer.

### Steps for this task

To repair the Advanced Viewer:

- 1 Perform step 1 of “[Wrong viewer is started](#)” on page 1-12.
- 2 Double-click the `repair.bat` file. See “[Folders and files included with the Advanced Viewer](#)” on page 1-10.

Your copy of Advanced Viewer is repaired.

## Opening Online Help

You can open the Online Help included with the Advanced Viewer from any of the study pages.

To open the Online Help:

- Click the **Help** icon on the main toolbar.



The Online Help is displayed in a separate window.

## Chapter 2 - Working with images

This section describes how to manipulate images within a study.

---

**Caution:** Any changes you make to an image do not persist after you close the study.

---

### In this section

This section contains the following topics:

Topic	See page
Opening studies from the Study List	2-2
Selecting and deselecting images	2-5
Flagging and unflagging images	2-7
Viewing images	2-9
Creating MPR images	2-32
Changing the image contrast and brightness	2-37
Resetting the series presentation	2-62
Adding annotations	2-63
Working with study presentations	2-93
Using Bookmarks	2-97



## Opening studies from the Study List

This section describes how to open studies, listed in the Study List.

### In this section

This section contains the following topics:

Topic	See page
Overview of the Study List	2-2
Displaying the Study List	2-3
Opening studies	2-4

## Overview of the Study List

The Study List provides a list of the patient studies that have been exported to the removable media or folder.

Figure 2-1 Study List

Patient	Study Date	Study Description	Modality
Anke, RsnA	1997-06-27 12:30	A9, A90	OT
Anonymous	2000-05-08 16:02	CR	CR

### Study List containing patient studies

The Study List displays the following information about the available studies:

Information	Description
Patient name	Lists the name of the patient.
Study Date	Lists the date and time when the study was performed.
Study Description	Lists the procedure type of the study.
Modality	Lists the attribute of the equipment used to capture the study images.

The Study List is displayed only if the removable media or folder contain multiple studies for one or more patients. Otherwise, the study is displayed.

## Displaying the Study List

This section describes how to display the Study List.

The Study List is displayed only when the removable media or folder contain more than one study.

The Study List may be displayed:

- Automatically
- Manually

### Manually displaying the Study List

To manually display the Study List:

- In an open study, click the **Study List** icon on the main toolbar.



The Study List is displayed.

## Opening studies

This section describes how to open studies from the Study List.

Depending on the contents of the removable media or folder, a study or the Study List is displayed:

If the removable media or folder contains...	Then...
A single study	<ul style="list-style-type: none"><li>The study is displayed. No further action is required.</li></ul>
Multiple studies	<ul style="list-style-type: none"><li>The Study List is displayed.</li></ul>

### Steps for this task

To open a study, from the Study List:

- 1 If it is not already displayed, display the Study List. See [“Manually displaying the Study List”](#) on page 2-3.
- 2 Click the study you need to view. The study is displayed.

## Selecting and deselecting images

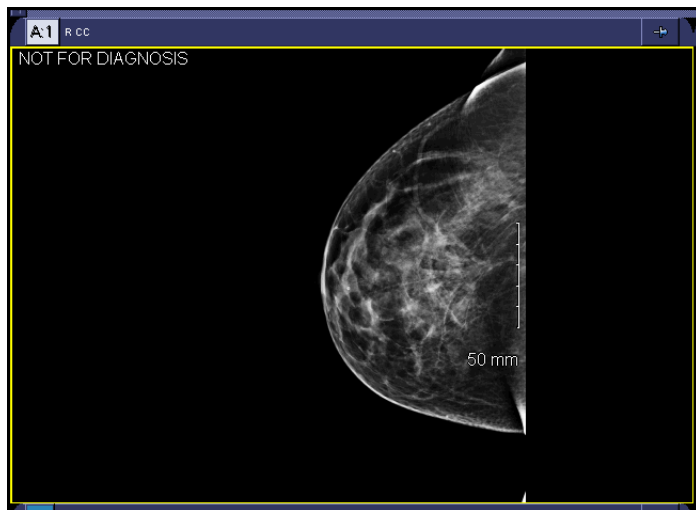
You can select and deselect an individual image, or multiple images.

### Indication of a selected image

A selected image is indicated in the following ways:

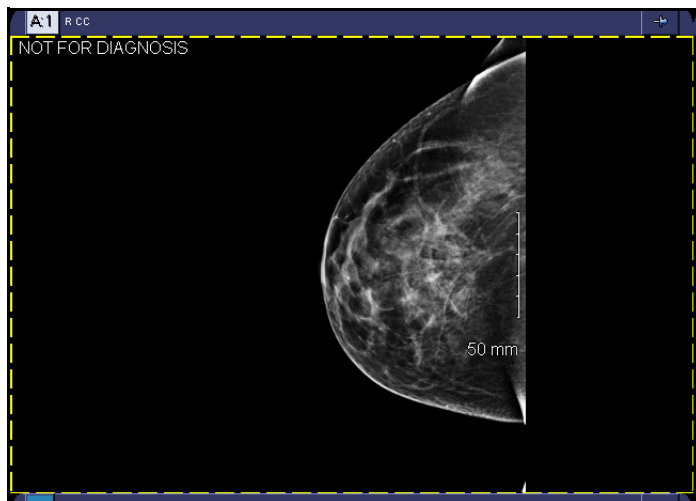
- A selected active image (the last selected image) is surrounded by a solid border.

*Figure 2-2 A selected active image*



- A selected non-active image is surrounded by a dashed border.

*Figure 2-3 A selected non-active image*



### Steps for this task

To select and deselect images:

- Click the image that you want to select or deselect. To select or deselect multiple images, hold down the CTRL key, and click the images.

## Flagging and unflagging images

Clinically significant images can be marked with a flag, so that they can be easily located and manipulated. You can flag and unflag an individual image, or multiple images.

### Restrictions for flagging images

The following restrictions exist:

- An image that was flagged in McKesson Radiology Station™, before it was exported, can be unflagged in the viewer temporarily. The unflagged state is not persistent. When you close the study, the image becomes flagged for the next time it is viewed.
- An image that was unflagged in McKesson Radiology Station™, before it was exported, can be flagged in the viewer temporarily. The flag is not persistent. When you close the study, the image becomes unflagged for the next time it is viewed.

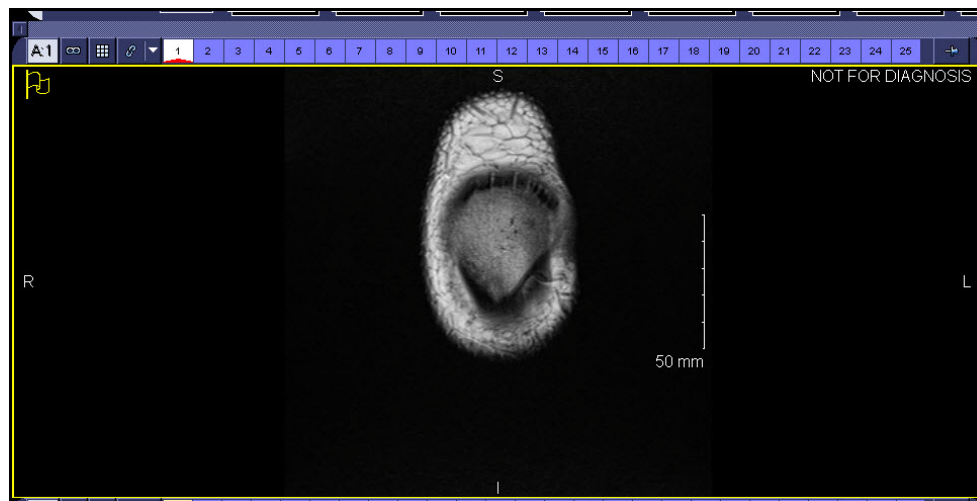
### Indication of a flagged image

A flagged image is indicated in the following ways:

- A red triangle is displayed on the bottom of the chit.
- A yellow flag is displayed on the image as **text overlay**. For details on text overlay, see “Displaying or hiding text overlay” on page 2-9.

Figure 2-4 shows that image 1 is flagged.

Figure 2-4 A flagged image



### Steps for this task

To flag and unflag images:

- 1 Select the images that you want to flag or unflag. See “Selecting and deselecting images” on page 2-5.

- 2 Click the **Flag** icon on the main toolbar.





## Viewing images

This section describes how to view images.

### In this section

This section contains the following topics:

Topic	See page
Displaying or hiding text overlay	2-9
Displaying or hiding annotations	2-12
Displaying or hiding the scale indicator	2-13
Displaying or hiding cross-reference lines	2-14
Zooming and panning images	2-16
Reorienting images	2-23
Magnifying a region of interest (ROI)	2-24
Viewing DICOM header information	2-29
Reference on mammography images	2-30

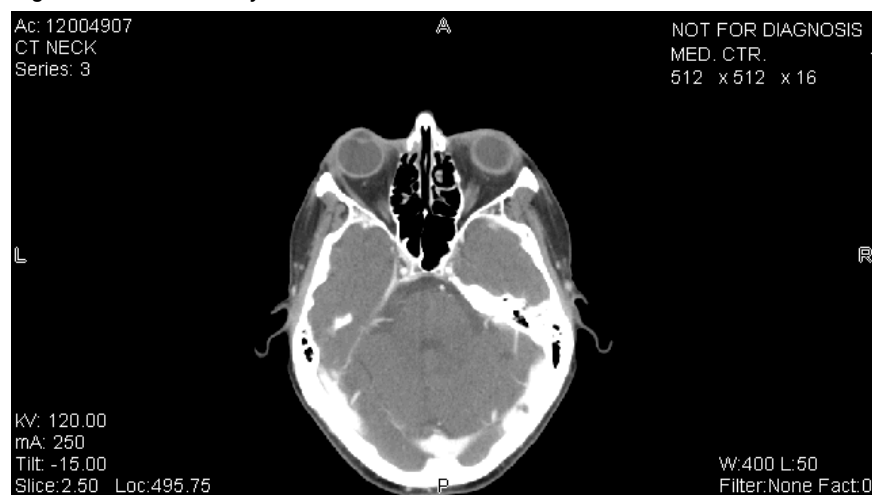
### Displaying or hiding text overlay

Text overlay displays details about an image, and the study and patient to which the image belongs.

Images can be displayed with or without text overlay. However, the text overlay that indicates non-diagnostic quality of images is always displayed and cannot be hidden. For more information, see “[Indication that images are not for diagnosis](#)” on page 2-10.

The content and location of text overlay are configured for your site and may be [modality](#) specific. For details, contact McKesson Support.

Figure 2-5 Text overlay



### Restrictions for displaying text overlay

You can display full or minimal text overlay. However, this may be affected by the size of the image display area within a viewport. For example, if the area is smaller than the minimum size required to display full text overlay, the minimal text overlay is displayed.

The minimum size of the image display area within a viewport required to display text overlay, full and minimal, is configured for your site by McKesson.

**Note:** The size of the image display area within a viewport depends on the number of viewports on the screen and the number of images in each viewport. For details, see [“Setting screen and viewport layout”](#) on page 3-19.

### Indication that images are not for diagnosis

The following text overlay is always displayed on each image, to indicate that the images cannot be used for diagnosis:

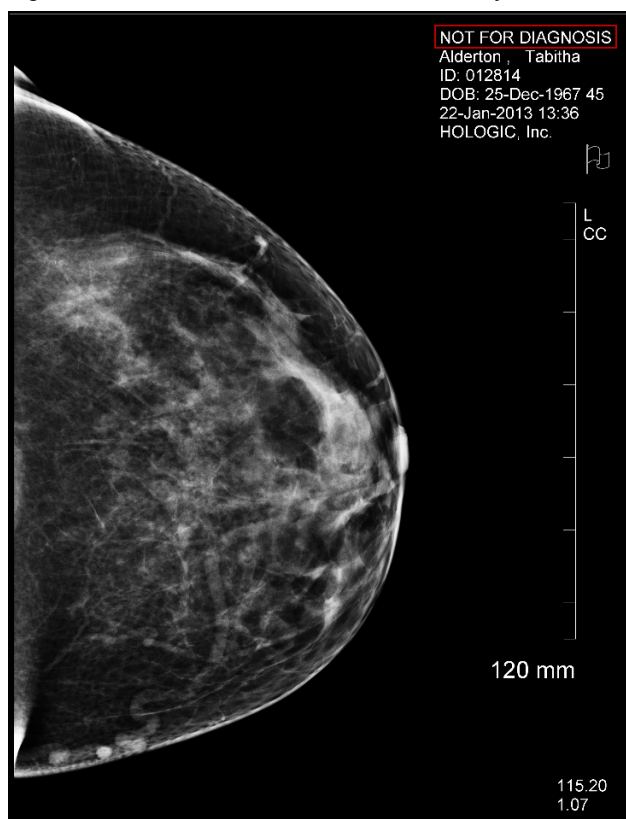
- NOT FOR DIAGNOSIS

The following table describes the location of the overlay on each image:

Modality type	Location
MG (mammography)	<ul style="list-style-type: none"> <li>• For left image laterality, top right corner of the viewport</li> <li>• For right image laterality, top left corner of the viewport</li> </ul> <p><b>Note:</b> Laterality refers to the specific left or right breast, not the patient orientation.</p>
Other	Top right corner of the viewport

**Note:** This text overlay cannot be hidden or configured in any way.

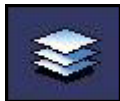
Figure 2-6 NOT FOR DIAGNOSIS text overlay



## Displaying or hiding text overlay

To display or hide text overlay:

- 1 Click the arrow beside the **Overlays** icon on the main toolbar.



- 2 From the menu that is displayed, select the option of your choice. The check mark indicates the currently selected option.

To...	Do this...
Display all text overlay	• Select <b>Full Text</b> .
Display minimal text overlay	• Select <b>Minimal Text</b> .
Hide text overlay	• Select <b>None</b> .

## Displaying or hiding annotations

Images can be displayed with or without **annotations**. For details on annotations, see “**Adding annotations**” on page 2-63.

### Prerequisite

Before displaying annotations, you need to display **text overlay**. For details, see “**Displaying or hiding text overlay**” on page 2-9.

### Steps for this task

To display or hide annotations:

- 1 Click the **Overlays** icon on the main toolbar.



- 2 From the menu that is displayed, select **Show Annotations**. The check mark beside the option indicates that annotations are currently displayed.

## Displaying or hiding the scale indicator

The scale indicator indicates the relative size of an image. If the **DICOM header** contains the scale information, images can be displayed with or without the scale indicator.

Figure 2-7 Scale indicator



**Note:** If the scale indicator exists, the measurement scale for the image is automatically calibrated. Otherwise, you need to calibrate the measurement scale manually before measuring the image. For details, see “**Calibrating the measurement scale**” on page 2-78.

### Steps for this task

To display or hide the scale indicator:

- 1 Click the **Overlays** icon on the main toolbar.



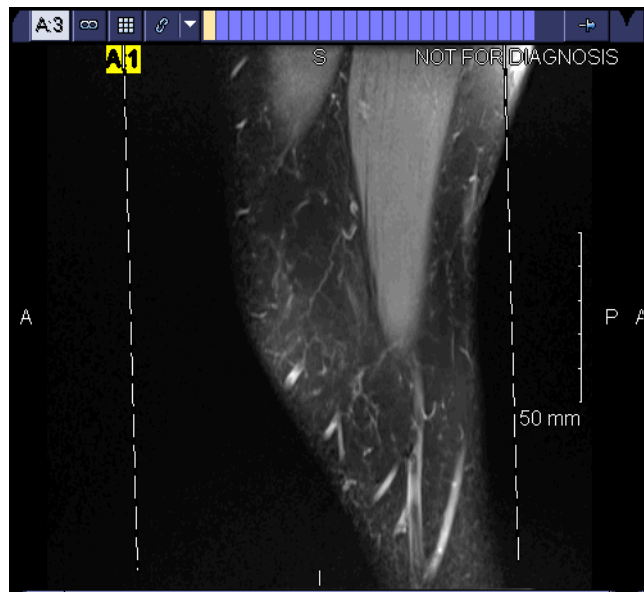
- 2 From the menu that is displayed, select **Show Scale**. The check mark beside the option indicates that the scale indicator is currently displayed.

## Displaying or hiding cross-reference lines

Cross-sectional images that share a spatial relationship can be displayed with or without cross-reference lines.

Cross-reference lines indicate the intersecting location of a **series** with respect to its spatially related series. They are typically used as a visual aid when moving through a series, to enable you to view the same **body region** in all displayed series. For details, see “**Scrolling through a series**” on page 3-12.

Figure 2-8 Cross-reference lines



### Types of cross-reference lines

The following table describes the three types of cross-reference lines.

Cross-reference line	Meaning
First	Indicates the location of the first image in the series. The first cross-reference line is a dashed line.
Current	Indicates the location of the current image in the series. The current cross-reference line is a solid line.
Last	Indicates the location of the last image in the series. The last cross-reference line is a dashed line.

### Restrictions for displaying the cross-reference lines

The following restrictions exist:

- Whether cross-reference lines can be displayed depends on the angle between the current image and the corresponding slice in the spatially related series. The minimal angle for displaying cross-reference lines is configured for your site by McKesson. If the angle between the current image and the corresponding slice is smaller than the minimal angle, the cross-reference lines are hidden.
- Cross-reference lines are automatically hidden when the images are in Cine mode. For details on the series display modes, see [“Selecting the series display mode”](#) on page 3-7.

### Steps for this task

To display or hide cross-reference lines:

- 1 Click the image for which you want to display the cross-reference lines.
- 2 Click the arrow beside the **Lines** icon on the main toolbar.



- 3 From the menu that is displayed, select the option of your choice. The check mark indicates the currently selected option.

To...	Do this...
Display the first, current, and last cross-reference lines	<ul style="list-style-type: none"><li>• Select <b>All</b>.</li></ul>
Display the current cross-reference line only	<ul style="list-style-type: none"><li>• Select <b>Current Image</b>.</li></ul>
Hide the cross-reference lines	<ul style="list-style-type: none"><li>• Select <b>None</b>.</li></ul>

## Zooming and panning images

This section describes how to use the Advanced Viewer zoom and pan tools.

### In this section

This section contains the following topics:

Topic	See page
About zooming and panning	2-16
Specifying the zoom and pan scope	2-16
Zooming images	2-18
Calibrating monitors for life size image display	2-20
Panning images	2-21
Resetting the Zoom/Pan settings	2-22
Displaying and hiding the image map	2-22

### About zooming and panning

You can view a region of interest (ROI) by zooming and panning an image:

- Zooming changes the magnification of an image. You can zoom images in a viewport or a separate window. For details, see “[Zooming images](#)” on page 2-18.
- Panning enables you to move through the zoomed area. For details, see “[Panning images](#)” on page 2-21.

### Specifying the zoom and pan scope

The zoom and pan scope determines the extent to which [zooming](#) and/or panning are applied. For an overview of zooming and panning, see “[About zooming and panning](#)” on page 2-16.

### Available zoom and pan scopes

The following table describes the available zoom and pan scopes in Advanced Viewer.

Zoom and pan scope	Meaning
Selected images	Applying zooming and/or panning to selected images.
Selected series	Applying zooming and/or panning to images in the selected series.



Zoom and pan scope	Meaning (Continued)
All visible series	Applying zooming and/or panning to images in all <b>series</b> that are displayed.

### Steps for this task

To specify the zoom and pan scope:

1 Do one of the following:

- Click the **Zoom** icon on the main toolbar.



- Click the **Pan** icon on the main toolbar.



The **Zoom And Pan** dialog box is displayed.

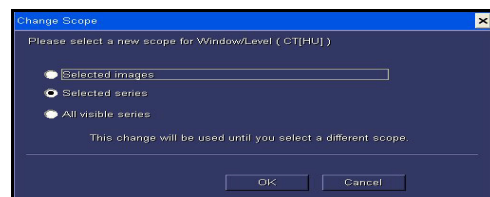
Figure 2-9 Zoom And Pan dialog box



2 Click **Change Scope**.

The **Change Scope** dialog box is displayed.

Figure 2-10 Change Scope dialog box



3 Select the zoom and pan scope. For details, see “**Available zoom and pan scopes**” on page 2-16.

4 Click **OK**.

## Zooming images

You can zoom images in one of the following ways:

- Select a zoom option
- Use the mouse
- Match the region of interest (ROI) of all displayed images to the last selected image
- Use your own [shortcuts](#) to zoom images. To set up shortcuts, see [“Adding and modifying user shortcuts”](#) on page 8-10.

---

**Note:** You can also zoom images in a Zoom window and Survey window. For details, See [“Displaying a series in a separate window”](#) on page 3-4.

---

## Zoom options

The following table describes the available zoom options.

Zoom option	Meaning
Zoom in 50%	Zoom the images to 50% larger than the current size.
Zoom out 50%	Zoom the images to 50% smaller than the current size.
Zoom to Fit	Zoom the images to fit the viewport.
Life Size	Display the images at their true physical size.  <hr/> <b>Note:</b> This option is not available if the images do not contain a measurement scale, or the monitors are not calibrated for life size image display. For details, see <a href="#">“Calibrating the measurement scale”</a> on page 2-78 and <a href="#">“Calibrating monitors for life size image display”</a> on page 2-20.
50%	Display the images at 50% of the original image size.
100%	Display the images at the original image size.
200%	Display the images at 200% of the original image size.

---

**Note:** The **200%** options are not available in the **Zoom And Pan** panel ([Figure 2-9](#) on page 2-17).

---

## Selecting a zoom option

To zoom images by selecting a zoom option:

- 1 Specify the zoom and pan scope. See “[Specifying the zoom and pan scope](#)” on page 2-16.
- 2 Click the image you want to zoom.
- 3 Click the **Zoom** icon on the main toolbar.



The **Zoom And Pan** panel is displayed. See *Figure 2-9* on page 2-17.

- 4 Select the zoom option. For details, see “[Zoom options](#)” on page 2-18.

The images within the zoom and pan scope are zoomed accordingly.

## Using the mouse

To use the mouse to zoom images:

- 1 Click the image you want to zoom.
- 2 Click the **Zoom** icon on the main toolbar.



The **Zoom And Pan** panel is displayed. See *Figure 2-9* on page 2-17.

- 3 Specify the zoom and pan scope. See “[Specifying the zoom and pan scope](#)” on page 2-16.
- 4 Drag the mouse up and down.
- 5 Release the left mouse button.

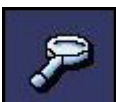
The images within the zoom and pan scope are zoomed accordingly.

## Matching the ROI of all displayed images to the last selected image

If the last selected image contains spatial information, you can zoom all displayed images to match the ROI of the last selected image.

To match the ROI of all displayed images to the last selected image:

- 1 Click the arrow beside the **Zoom** icon on the main toolbar.



- 2 From the menu that is displayed, select **Match ROI**.

—or—

Instead of steps 1-2, right-click the last selected image, point to **Zoom**, and then select **Match ROI**.

**Note:** Whether the **Zoom** option is displayed on the right-click menu depends on your right-click preferences. See “[Right-click menu preferences](#)” on page 8-7.

## Calibrating monitors for life size image display

Displaying images at life size enables you to clearly visualize the anatomy at its physical size. The monitors are calibrated for life size image display at installation by McKesson. You may also re-calibrate the monitors at anytime.

### Restriction for calibrating monitors for life size image display

You must have the authority to calibrate monitors for life size image display. For details, contact your system administrator.

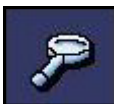
### Prerequisite

You need a ruler that can be placed flat on the monitor.

### Steps for this task

To calibrate a monitor at life size:

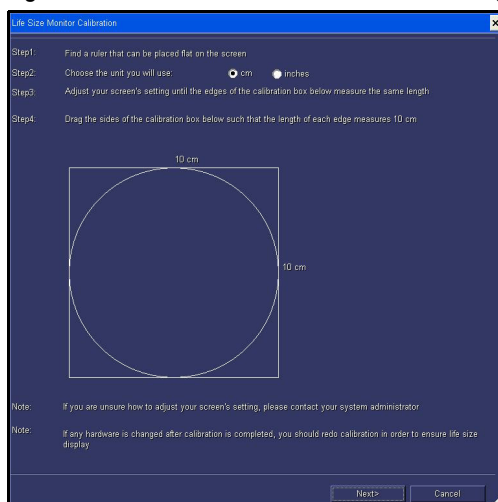
- 1 Click the arrow beside the **Zoom** icon on the main toolbar.



- 2 From the menu that is displayed, select **Calibrate Monitor for Life Size**.

The **Life Size Monitor Calibration** dialog box is displayed.

Figure 2-11 Life Size Monitor Calibration dialog box



- 3 Calibrate the monitor as follows:
  - Specify the measurement unit you want to use for calibration. The available options are **cm** or **inches**.
  - Drag the lower right corner of the **Life Size Monitor Calibration** dialog box, until the sides of the calibration box (the box that contains a circle) have the same length.
  - Drag the calibration box, until the length of each side is the same as the indicated measurement (10 cm or 5 inches).
- 4 Click **Next**.
- 5 If the workstation has multiple monitors, the **Life Size Monitor Calibration** dialog box is displayed on the next monitor. Repeat steps 3-4 for each monitor.
- 6 Click **Finish**.

## Panning images

Panning a zoomed image enables you to view a different a region of interest (ROI). You can pan images from:

- The Zoom And Pan panel. See *Figure 2-9* on page 2-17.
- The image map. The image map is a representation of the selected image. For details, see “[Displaying and hiding the image map](#)” on page 2-22.

–or–

Use your own [shortcut](#) to pan images. To set up a shortcut, see “[Adding and modifying user shortcuts](#)” on page 8-10.

## Restriction for panning images

Images displayed in a [Zoom window](#) and [Survey window](#) cannot be panned. For details, see “[Zoom window and Survey window](#)” on page 3-5.

## Panning images from the Zoom and Pan panel

To pan images from the Zoom And Pan panel:

- 1 Click the zoomed image that you want to pan.
- 2 Click the **Pan** icon on the main toolbar.



The **Zoom and Pan** panel is displayed. See *Figure 2-9* on page 2-17.

- 3 Specify the zoom and pan scope. See “[Specifying the zoom and pan scope](#)” on page 2-16.
- 4 Drag the mouse pointer, to display the new ROI.

The new ROI is displayed on images within the zoom and pan scope.

## Panning images from the image map

To pan images from the image map:

- 1 Click the zoomed image that you want to pan.
- 2 Display the image map. See “[Displaying and hiding the image map](#)” on page 2-22.
- 3 Specify the zoom and pan scope. See “[Specifying the zoom and pan scope](#)” on page 2-16.
- 4 On the image map, click the location of the new ROI.

The new ROI is displayed on images within the zoom and pan scope.

## Resetting the Zoom/Pan settings

You can reset the Zoom/Pan settings of a [series](#), so that the images within it are zoomed to fit the viewport. In addition, other presentation settings are reset simultaneously. See “[Resetting the series presentation](#)” on page 2-62.

## Displaying and hiding the image map

The image map is a visual aid for [zooming](#) and panning images. It serves as a representation of the selected image. If the selected image contains [annotations](#), the annotations are also displayed.

Figure 2-12 Image map is displayed in the Zoom and Pan panel



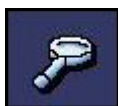
The region of interest (ROI) is indicated by a rectangle with a solid border. You can pan the ROI directly from the image map.

## Steps for this task

To display or hide the image map:

- 1 Click the image whose image map you want to display or hide.
- 2 Do one of the following, to display the **Zoom And Pan** panel ([Figure 2-9](#) on page 2-17):

- Click the **Zoom** icon on the main toolbar.



- Click the **Pan** icon on the main toolbar.



- Do one of the following:

To...	Do this...
Display the image map	<ul style="list-style-type: none"> <li>Click <b>Show Map</b>.</li> </ul>
Hide the image map	<ul style="list-style-type: none"> <li>Click <b>Hide Map</b>.</li> </ul>

The image map is displayed or hidden accordingly.

## Reorienting images

You can rotate and/or flip an image to view it from a different angle. When you rotate and/or flip an image, all the images within that series are adjusted accordingly.

**Note:** You can also reset the image orientation of a series, so that the images within it are displayed with the standard orientation. In addition, other presentation settings are reset simultaneously. See [“Resetting the series presentation”](#) on page 2-62.

### Restriction for reorienting images

If a **series** is displayed in multiple viewports, the same image cannot have different rotations in different viewports.

### Rotating an image

To rotate an image:



To...	Do this...
Rotate the image 90° to the left (counter-clockwise)	<ul style="list-style-type: none"> <li>Right-click the image you want to rotate, point to <b>Re-Orient</b>, and then select <b>Rotate Counter-Clockwise</b>.</li> </ul>
Rotate the image 90° to the right (clockwise)	<ul style="list-style-type: none"> <li>Right-click the image you want to rotate, point to <b>Re-Orient</b>, and then select <b>Rotate Clockwise</b>.</li> </ul>

**Note:** Whether the **Re-Orient** option is displayed on the right-click menu depends on your right-click preferences. See [“Right-click menu preferences”](#) on page 8-7.

## Flipping an image

To flip an image:

- 1 Click the image.
- 2 Flip the image as follows:

To...	Do this...
Flip the image horizontally, as if viewing it in a mirror	<ul style="list-style-type: none"> <li>Click the <b>Flip Hz</b> icon on the main toolbar.</li> </ul> 
Flip the image vertically, as if viewing it upside down	<ul style="list-style-type: none"> <li>Click the <b>Flip Vt</b> icon on the main toolbar.</li> </ul> 

The image is flipped accordingly. The adjusted orientation is applied to all images within the series.

## Magnifying a region of interest (ROI)

You can use the Magnifying Glass, to magnify a small area of an image. As a result, the region of interest (ROI) can be reviewed in detail. Typically, the Magnifying Glass is used for CR studies.

In addition, you can:

- Adjust the size of the Magnifying Glass and the zoom multiplier value

---

**Note:** The magnification factor of the Magnifying Glass is obtained by applying the zoom multiplier value to the image zoom ratio. For example, if the glass zoom multiplier value is 2, and the image zoom ratio is 75%, the Magnifying Glass shows the ROI at 150% of its original size. For details on image zoom ratio, see [“Zooming and panning images”](#) on page 2-16.

---

- Apply one of the following [Window/Level](#) values to the ROI:
  - Window/Level specified for the image
  - Window/Level estimated for the ROI (See [“Estimate Window/Level”](#) on page 2-43)
- Apply post processing to the ROI (See [“About post processing”](#) on page 2-59)



## Restrictions for magnifying a ROI

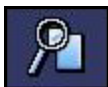
The following restrictions exist:

- The Magnifying Glass cannot be used when the images are in Cine mode. For details on the series display modes, see “[Selecting the series display mode](#)” on page 3-7.
- The post processing option of the Magnifying Glass is not available for mammography diagnosis.
- [Annotations](#) on the magnified image are not displayed.

## Steps for this task

To magnify a ROI:

- 1 Click the image.
- 2 Click the **Glass** icon on the main toolbar.



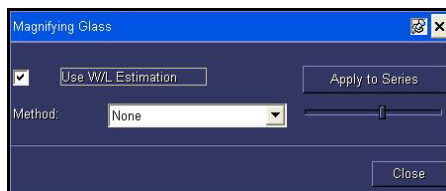
The Magnifying Glass is placed on the center of the image.

Figure 2-13 Magnifying Glass on the image

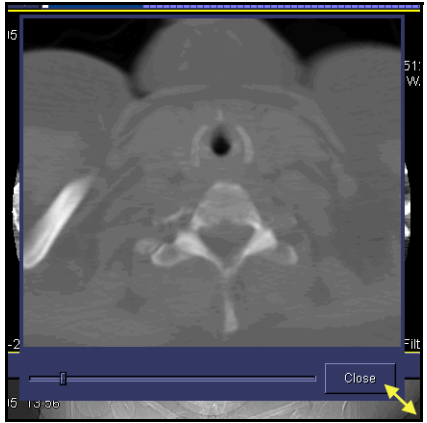


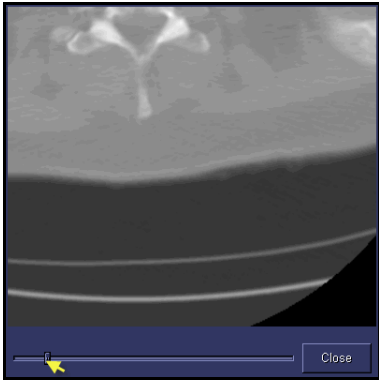
In addition, the **Magnifying Glass** dialog box is displayed.

Figure 2-14 Magnifying Glass dialog box



## 3 Optionally, adjust the Magnifying Glass properties:

To...	Do this...
Adjust the size of the Magnifying Glass	<ul style="list-style-type: none"><li>• Drag the edge of the Magnifying Glass, then release the mouse button.</li></ul>  <p><b>Note:</b> Changing the size of the Magnifying Glass enables you to adjust the size of the ROI. It does not relocate the center point of the Magnifying Glass, or change the zoom multiplier value.</p>

To...	Do this... (Continued)
Adjust the glass zoom multiplier value	<ul style="list-style-type: none"> <li>• Drag the slider under the Magnifying Glass, in the appropriate direction: <ul style="list-style-type: none"> <li>- To increase the zoom multiplier value, drag the slider to the right</li> <li>- To decrease the zoom multiplier value, drag the slider to the left</li> </ul> </li> </ul>  <p><b>Note:</b> Changing the zoom multiplier value does not relocate the center point of the Magnifying Glass.</p>

- 4 In the **Magnifying Glass** dialog box (Figure 2-14 on page 2-25), specify the **Window/Level** to apply to the ROI:

To...	Do this...
Apply the Estimate Window/Level	<ol style="list-style-type: none"> <li>1 Select the <b>Use W/L Estimation</b> check box.</li> <li>2 To apply the Estimate Window/Level to all images in the series, click <b>Apply to Series</b>.</li> </ol>
Apply the image Window/Level	<ul style="list-style-type: none"> <li>• Clear the <b>Use W/L Estimation</b> check box.</li> </ul>

- 5 In the **Magnifying Glass** dialog box (*Figure 2-14* on page 2-25), apply post processing to the ROI, or remove post processing from it:

To...	Do this...
Apply post processing to the ROI	<ol style="list-style-type: none"><li>1 Click the <b>Method</b> box, and select <b>Sharp-Smooth</b>.</li><li>2 Sharpen or smoothen the ROI as follows:<ul style="list-style-type: none"><li>- To sharpen the ROI, drag the slider to the left.</li><li>- To smoothen the ROI, drag the slider to the right.</li></ul></li></ol>
Remove post processing from the ROI	<ul style="list-style-type: none"><li>• Click the <b>Method</b> box, and select <b>None</b>.</li></ul>

- 6 Drag the Magnifying Glass around, to review the ROI. To magnify a ROI on another image, drag the Magnifying Glass to that image.
- 7 Click **Close**.

## Viewing DICOM header information

DICOM files contain information about a study and the images it contains. A DICOM file is generated by the **image device**, when the images are captured. Each DICOM file contains two parts:

- DICOM header, which contains all the patient and study data associated with the image
- Other Image Data, which conveys the pixel information

### Displaying the DICOM header

To view DICOM header information for an image:

- 1 Right-click the image and point to **Study Info**, and then select **DICOM Header Viewer**.

**Note:** Whether the **Study Info** option is displayed on the right-click menu depends on your right-click preferences. See **“Right-click menu preferences”** on page 8-7.

The **DICOM Header Viewer** is displayed, listing the DICOM header information.

Figure 2-15 DICOM Header Viewer

Tag	Description	Value	Representation/Size
0002 0001	META Meta Information V...	00 01	OB/2
0002 0002	META Media Stored SOP...	1.2.840.10008.5.1.4.1.1.2	UI/27
0002 0010	META Transfer Syntax UID	1.2.840.10008.1.2.4.70	UI/23
0002 0013	META Meta Information V...	V1.0	SH/5
0002 0016	META Meta Information E...	ALI STORE SCP	AE/15
0002 0102	META Private Information	65 76 73 32 68 73 67 79 77 32	OB/28
0008 0005	ID Specific Character Set	ISO_IR 100	CS/11
0008 0008	ID Image Type	ORIGINAL	CS/9
0008 0008	ID Image Type	PRIMARY	CS/8
0008 0008	ID Image Type	AXIAL	CS/6
0008 0016	ID SOP Class UID	1.2.840.10008.5.1.4.1.1.2	UI/27
0008 0018	ID SOP Instance UID	1.2.840.113619.2.22.287.1.10737.2.2.2005...	UI/53
0008 0020	ID Study Date	2012 4 5	DA/3
0008 0021	ID Series Date	2005 9 15	DA/3
0008 0022	ID Acquisition Date	2005 9 15	DA/3
0008 0023	ID Image Date	2005 9 15	DA/3
0008 0030	ID Study Time	7 55 0 0	TM/4
0008 0031	ID Series Time	13 58 2 0	TM/4
0008 0032	ID Acquisition Time	13 58 29 581942	TM/4
0008 0033	ID Image Time	13 58 42 0	TM/4
0008 0050	ID Accession Number	1334387	SH/9
0008 0060	ID Modality	CT	CS/3
0008 0070	ID Manufacturer	GE MEDICAL SYSTEMS	LO/19
0008 0080	ID Institution Name	Farmfield	LO/11
0008 0090	ID Referring Physician's N...	Lutz-Md	PN/8
0008 0090	ID Referring Physician's N...	Myron	PN/6

- 2 Click **Close**.

### Sorting the DICOM header

To sort the DICOM header:

- 1 Click the column header of the column by which you want to sort.

An arrow is displayed to the left of the column header. A DOWN ARROW indicates an ascending order (A-Z or 1-10), and an UP ARROW indicates a descending order (Z-A or 10-1).

- 2 To reverse the sort order, click the column header again.

## Reference on mammography images

With Advanced Viewer, you can view digital mammography images.

To ensure optimal viewing, you can:

- Hide the main toolbar. For details, see “Main toolbar preferences” on page 8-2.
- Hide the Thumbnail toolbar. For details, see “Displaying and hiding the Thumbnail toolbar” on page A-16.

If digital mammography images contain CAD bitmap overlays, the overlays are removed upon export. You cannot view CAD bitmap overlays in Advanced Viewer.

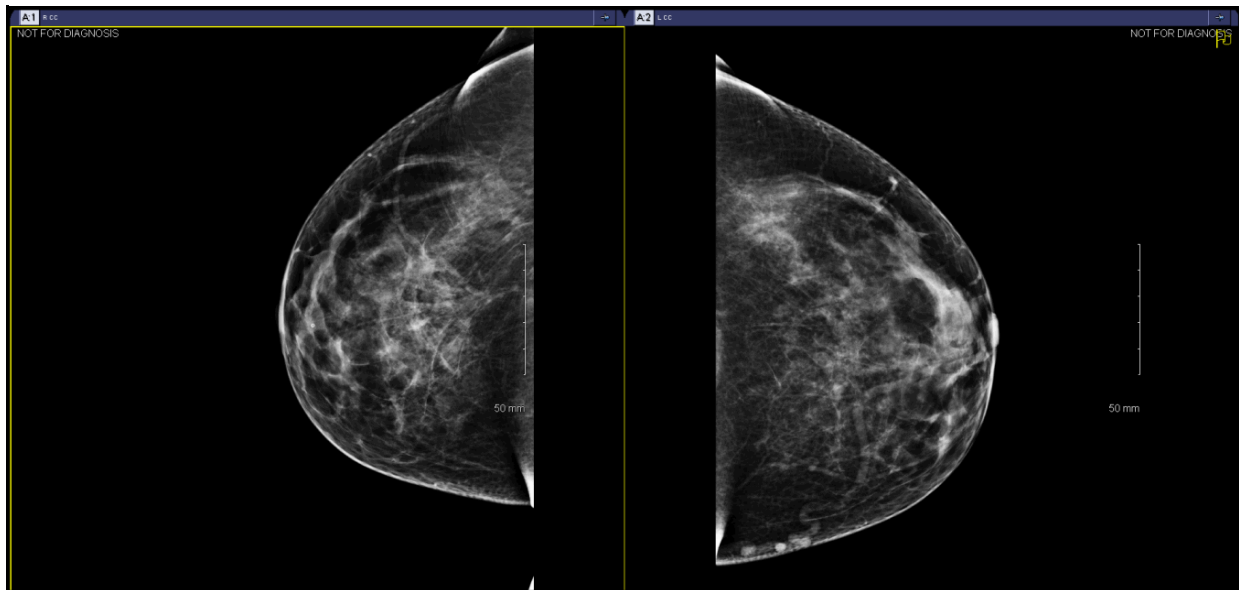
Mammography images can be displayed with or without text overlay. However, the text overlay that indicates non-diagnostic quality of images is always displayed and cannot be hidden. See “Indication that images are not for diagnosis” on page 2-10.

## Orientation of mammography images

Mammography images are displayed in the following orientations:

Projection	Right breast	Left breast
CC, FB	<ul style="list-style-type: none"><li>• Posterior edge on right</li><li>• Right edge along the top</li></ul>	<ul style="list-style-type: none"><li>• Posterior edge on left</li><li>• Left on top edge</li></ul>
MLO, LMO, LM, ML	<ul style="list-style-type: none"><li>• Posterior edge on right</li><li>• Superior edge along the top</li></ul>	<ul style="list-style-type: none"><li>• Posterior edge on left</li><li>• Superior edge along the top</li></ul>

Figure 2-16 Orientation of CC projection



### Tools disabled for mammography images

The following Advanced Viewer tools are disabled when mammography images are displayed:

- Post processing
- The post processing option of the Magnifying Glass

For details, see [“About post processing”](#) on page 2-59.

## Creating MPR images

This section describes how to create Multi-Planar Reconstruction (MPR) images.

**Caution:** MPR images cannot be saved in the Advanced Viewer. MPR images can be saved in McKesson Radiology Station™ only. For details on saving MPR images using McKesson Radiology Station™, refer to the *McKesson Radiology Station™ User's Guide*.

### In this section

This section contains the following topics:

Topic	See page
About creating MPR images	2-32
Step 1: Specifying the MPR range	2-33
Step 2: Creating the MPR images	2-35

## About creating MPR images

Multi-Planar Reconstruction (MPR) enables you to view cross-sectional **series** in an orthogonal plane other than the original one.

### Orthogonal planes

The following table describes the planes in which you can create MPR images.

Plane	Description
Axial	This plane runs parallel to the ground, dividing the standing body into top and bottom sections.
Coronal	This plane runs perpendicular to the ground, dividing the standing body into front and back sections.
Sagittal	This plane runs perpendicular to the ground, dividing the standing body into right and left sections.

### Two ways to create MPR images

MPR images can be automatically created in one of the following situations:

- The **display protocol** currently applied to the study specifies to create MPR images for a particular viewport. For details, see “**About display protocols**” on page 6-2.
- When a **Bookmark** is applied to the study, and the Bookmark contains saved MPR information. For details, see “**Understanding Bookmarks**” on page 2-97.

In addition, you can manually create MPR images. See the following topics:



- “[Step 1: Specifying the MPR range](#)” on page 2-33
- “[Step 2: Creating the MPR images](#)” on page 2-35

## Manipulating MPR images

You can perform the following tasks to MPR images:

- Change the viewport layout (See “[Setting the viewport layout](#)” on page 3-20)
- Move through the images (See “[Navigating a series](#)” on page 3-12)
- Link images (See “[Working with linked series](#)” on page 3-21)
- Select images (See “[Selecting and deselecting images](#)” on page 2-5)
- Display selected images only (See “[Specifying the series viewing scope](#)” on page 3-9)
- Zoom and pan images (See “[Zooming and panning images](#)” on page 2-16)
- Rotate and flip images (See “[Reorienting images](#)” on page 2-23)
- Magnify a small area of the images (See “[Magnifying a region of interest \(ROI\)](#)” on page 2-24)
- Adjust [Window/Level](#) (See “[Adjusting the Window/Level values](#)” on page 2-42)
- Apply post processing to images (See “[Applying post processing](#)” on page 2-59)
- Add temporary [annotations](#)
- Play the MPR images as a [cine clip](#) (See “[Playing cine clips](#)” on page 4-4)

## Saving MPR images

The MPR images you create cannot be saved. The images are deleted when you close the study.

## Step 1: Specifying the MPR range

You can specify the range from which to [create Multi-Planar Reconstruction \(MPR\) images](#). If the MPR range is not specified, the entire series is used.

For an overview of MPR images, see “[About creating MPR images](#)” on page 2-32.

## Setting the MPR start range

To set the MPR start range:

- 1 Click the first image for creating MPR images.
- 2 Click the **Display Mode** icon at the top of the viewport. The **Display Mode** icon indicates the types of images currently displayed. For details, see “[Specifying the series viewing scope](#)” on page 3-9.



- 3 From the menu that is displayed, point to **Advanced**, and then select **Start MPR Range Marker**.

## Setting the MPR end range

To set the MPR end range:

- 1 Click the last image for creating MPR images.
- 2 Click the **Display Mode** icon at the top of the viewport.
- 3 From the menu that is displayed, point to **Advanced**, and then select **End MPR Range Marker**.

## Clearing the MPR range

To clear the MPR range:

- 1 Click the viewport.
- 2 Click the **Display Mode** icon at the top of the viewport.



- 3 From the menu that is displayed, point to **Advanced**, and then select **Clear MPR Range Markers**.

## Step 2: Creating the MPR images

After specifying the MPR range, you can create the MPR images.

### Steps for this task

To create the MPR images:

- 1 Click the **Display Mode** icon at the top of the viewport.



The **Display Mode** icon indicates the types of images currently displayed. For details, see “Specifying the series viewing scope” on page 3-9.

- 2 From the menu that is displayed, select the plane in which you want to create the images. See “Orthogonal planes” on page 2-32.

The MPR images are created accordingly. If the **Valid Image Subset Selection** dialog box is displayed, see “Selecting a subset” on page 2-35.

### Selecting a subset

When you create MPR images, Advanced Viewer checks for non-uniform images in the series. Images are considered non-uniform when they have the following properties:

- Different orientation, for example, an image in the series is displayed in a different position when compared to the rest of the series (for example, the image has been flipped or rotated).
- Different slice thickness
- Irregular spacing, which results in gaps between the slices.

Non-uniform images cannot be used to create MPR images. As a result, Advanced Viewer identifies subsets that contain uniform images. You can select the subset from which you want to create MPR images.

### Steps for this task

To select a subset:

- 1 In the **Valid Image Subset Selection** dialog box, click the subset from which you want to create MPR images.

If there are more than four subsets, you can page through the subsets, by clicking **Next** and **Previous**.

---

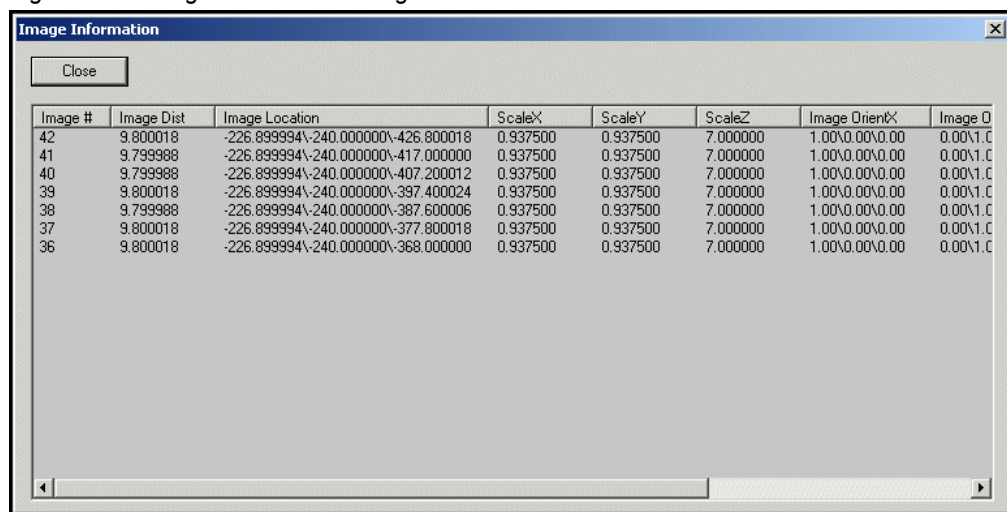
**Note:** The slider on top of each thumbnail indicates where the corresponding image is located within the series. To view a different image, drag the slider to a different position. Or, you can scroll through the subset, by placing the mouse pointer on the thumbnail and rotating the mouse wheel.

---

- 2 Optionally, to view the information about the images in the subset, do the following:
  - Click the subset, and then click **Info**.

- The **Image Information** dialog box is displayed. When you finish viewing the information, click **Close**.

Figure 2-17 Image Information dialog box



- 3 Click **OK**. The MPR images are created accordingly.

## Changing the image contrast and brightness

This section describes how to change the image contrast and brightness.

### In this section

This section contains the following topics:

Topic	See page
About image contrast and brightness	2-38
Specifying the Window/Level scope	2-40
Adjusting the Window/Level values	2-42
Selecting a LUT function to apply	2-50
Optimizing image presentation with non-linear LUT functions	2-52
Displaying and hiding the histogram and LUT function graph	2-57
Applying post processing	2-59

## About image contrast and brightness

This section describes the concepts of Look-Up Tables (LUTs), Window/Level values, and intensity unit.

### In this section

This section contains the following topics:

Topic	See page
<a href="#">Understanding Look-Up Tables and Window/Level values</a>	2-38
<a href="#">Understanding the intensity unit</a>	2-39

## Understanding Look-Up Tables and Window/Level values

Adjusting the image contrast and brightness enables you to review a particular pathology. You can also adjust the contrast and brightness of **US** images, to compensate for poor gain settings when the images were captured.

The image contrast and brightness are determined by the following factors:

- The Look-Up Table (LUT) function, which is used to display the image on the window
- The Window/Level values of the image

You can specify the extent to which Window/Level values and LUT function are applied. For details, see [“Specifying the Window/Level scope”](#) on page 2-40.

### How Look-Up Tables are used

An image is composed of a large number of pixels, each corresponding to a point in the image. When displaying images on the screen, Advanced Viewer uses a Look-Up Table (LUT) function to map the image pixel values to the display values. For **grayscale** images, the display value is the relative brightness. As a result, the pixels are displayed on the screen with different brightness and contrast.

You can adjust the image contrast and brightness by applying different LUTs. See [“Selecting a LUT function to apply”](#) on page 2-50.

---

**Note:** The pixel values for CT and CR/DR/DX images are converted to pixel intensity values. For details, see [“Understanding the intensity unit”](#) on page 2-39.

---

## Understanding Window/Level

Window and Level are **image processing** parameters that define how captured image intensities are displayed on the screen.

The display values of displayed images lie in a particular range. This range determines the brightness of the pixels:

- All pixels with a value below this range are black

- All those with a value above this range are white
- All pixels within this smaller range are shades of grey

The range of 0-255 is the range within which the human eyes can detect noticeable luminance changes. A smaller range can be used to display certain features in an image more clearly. For example, if this “sub” range was from 100 to 150, then all pixels with values less than 100 would appear black, while all those with values greater than 150 would appear white. Pixels between 100 and 150 would appear grey.

Window and Level relate directly to this “sub” range of pixel values:

- Window is the total width of the sub-range (50 in the above example). Window controls the contrast of an image.
- Level is the average (middle) value of the sub-range (125 in the above example). Level controls the brightness of an image.

You can adjust the image contrast and brightness, by adjusting the Window/Level. See [“Adjusting the Window/Level values”](#) on page 2-42.

## Understanding the intensity unit

For CT and CR/DR/DX images, their pixel values are converted to pixel intensity values.

### Intensity units

The following table describes the two intensity units.

Intensity unit	Meaning
Hounsfield Unit (HU)	Conveys the relative density of a pixel value compared to water. HU is the intensity unit for CT images.
Optical Density (OD)	Conveys the opacity of a pixel. OD is the intensity unit for CR/DR/DX images.

### Use of the pixel intensity values

Different tissue types have unique density and opacity ranges. As a result, pixel intensity values can indicate the tissue types of a region of interest (ROI). For example, you can measure the pixel intensity value of an Elliptical ROI or a point, to examine whether there is water in the ROI. For procedures, see [“Adding and measuring the Elliptical Region of Interest \(ROI\)”](#) on page 2-84 and [“Measuring the pixel intensity of a point”](#) on page 2-86.

## Specifying the Window/Level scope

The Window/Level scope determines the extent to which **Window/Level** values and LUT function are applied. For details on Window/Level values and LUT functions, see “**Understanding Look-Up Tables and Window/Level values**” on page 2-38.

### Available Window/Level scopes

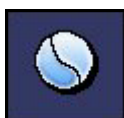
The following table describes the available Window/Level scopes in McKesson Radiology™ Disc.

Window/Level scope	Meaning
Selected images	Apply the Window/Level values and LUT function to selected images.
Selected series	Apply the Window/Level values and LUT function to images in the selected <b>series</b> .
All visible series	Apply the Window/Level values and LUT function to images in all series that are displayed.

### Steps for this task

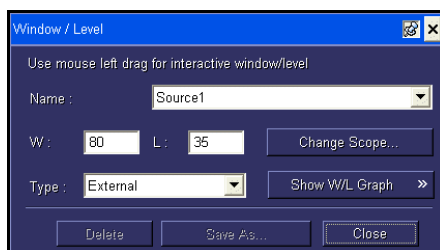
To specify the Window/Level scope:

- 1 Click the **W/L** icon on the main toolbar.



The Window/Level panel is displayed.

Figure 2-18 Window/Level panel

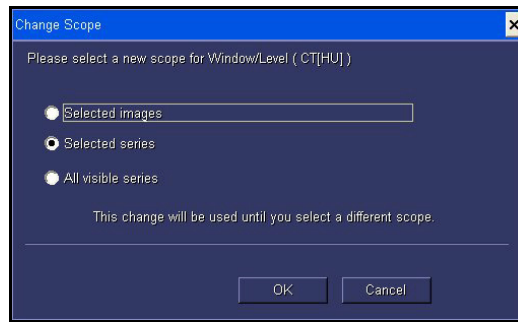


- 2 Click **Change Scope**.

The **Change Scope** dialog box is displayed.



Figure 2-19 Change Scope dialog box



- 3 Select the Window/Level scope. For details, see [“Available Window/Level scopes”](#) on page 2-40.
- 4 Click **OK**.

## Adjusting the Window/Level values

This section describes how to adjust the Window/Level values of images.

### In this section

This section contains the following topics:

Topic	See page
Types of Window/Level values	2-43
Applying Window/Level values	2-44
Applying a Window/Level preset	2-46
Adjusting the Window/Level values interactively	2-48
Entering the new Window/Level values	2-49
Resetting the Window/Level values	2-49

## Types of Window/Level values

There are four types of **Window/Level** values in McKesson Radiology™ Disc:

- Source Window/Level
- Estimate Window/Level
- Default Window/Level
- Window/Level presets

To apply one of these Window/Level values, use the **Window/Level** panel (*Figure 2-18* on page 2-40), the main toolbar, or the right-click menu. For details, see “**Applying Window/Level values**” on page 2-44.

### Source Window/Level

A Source Window/Level contains the Window/Level values and/or Look-Up Table (LUT) functions provided by the **image device**. The values are stored in the **DICOM header**. Up to six Source Window/Level values and LUT functions can be stored.

- If there is one Source Window/Level or LUT function, **Source** is listed.
- If there are multiple Source Window/Level values and/or LUT functions, **Source 1**, **Source 2**, and so on are listed. An asterisk (\*) appended to the number indicates that the Source Window/Level is specific for the **modality**, image device, and/or image type.

### Estimate Window/Level

The Estimate Window/Level contains the Window/Level values estimated based on histogram analysis of the image. For details on the histogram, see “**Displaying and hiding the histogram and LUT function graph**” on page 2-57.

Use the Estimate Window/Level when the values provided by the **image device** do not produce an optimal image presentation. It is listed as **Estimate**.

---

**Note:** Window/Level values can also be estimated for and applied to a small, magnified area of an image. See “**Magnifying a region of interest (ROI)**” on page 2-24.

---

### Default Window/Level

The Default Window/Level contains the Window/Level values determined by the system. It is perceived as the best available Window/Level for the images.

The Default Window/Level is determined by the following factors:

If...	Then...
Saved <b>study presentation</b> for the study exist	The Window/Level in the most recently saved presentation is the Default Window/Level. It is listed as <b>Default (Saved)</b> .  See also “ <b>About study presentations</b> ” on page 2-93.

If...	Then... (Continued)
There are more than one Window/Level in the DICOM header	The Source Window/Level specific for the <b>modality</b> , image device, and/or image type is the Default Window/Level. It is listed as <b>Default (Source n*)</b> , where n is the Source Window/Level number.
There is only one Window/Level in the DICOM header	The Source Window/Level is the Default Window/Level. It is listed as <b>Default (Source)</b> .
There are no saved presentations or Window/Level values in the DICOM header	The Estimate Window/Level is the Default Window/Level. It is listed as <b>Default (Estimate)</b> .

**Note:** The Default Window/Level is not listed in the **Window/Level** panel.

## Window/Level presets

A predefined Window/Level preset contains predefined Window/Level values and LUT function for a specific **modality/intensity unit** combination. Window/Level presets can be shipped with McKesson Radiology™ Disc, configured for the site, or defined by users.

Window/Level presets are used to quickly apply the optimal image presentation settings for a particular modality and **body region**. For example, you can save a Window/Level preset that contains optimal settings for the CT modality and the Head body region.

Window/Level presets are listed alphabetically by their name. In addition, for presets whose applied LUT function is not Linear, the LUT function type is appended to the name. For example:

- The **CT Head** preset pertains to the Linear LUT function
- The **CT Soft Tissue - Gamma** preset pertains to the Gamma LUT function

For details on the different LUT functions, see “**Types of LUT functions**” on page 2-50.

To add, modify, and delete Window/Level presets, see “**Applying post processing**” on page 2-59.

## Applying Window/Level values

The **Window/Level** values can be applied from:

- The **Window/Level** panel (*Figure 2-18* on page 2-40)
- The main toolbar
- The right-click menu

There are four types of Window/Level values that you can apply. See “Types of Window/Level values” on page 2-43.

---

**Note:**

- The Default Window/Level is not listed in the **Window/Level** panel.
  - You can also use your own **shortcuts** to apply the Default Window/Level and Estimate Window/Level. To set up shortcuts, see “Adding and modifying user shortcuts” on page 8-10.
- 

### Applying Window/Level values from the Window Level panel

To apply Window/Level values from the **Window/Level** panel:

- 1 Click the image to which you want to apply the Window/Level values.
- 2 Click the **W/L** icon on the main toolbar.



The **Window/Level** panel is displayed.

For other ways to display the **Window/Level** panel, see step 1 of “Specifying the Window/Level scope” on page 2-40.

- 3 Specify the Window/Level scope. See “Specifying the Window/Level scope” on page 2-40.
- 4 Click the **Name** box, and select name of the Window/Level you want to apply.

---

**Note:** Not all **Window/Level presets** are listed. To apply presets not listed on the menu, see “Adjusting the Window/Level values” on page 2-42.

---

The selected Window/Level values are applied accordingly.

### Applying Window/Level values from the main toolbar

To apply Window/Level values from the main toolbar:

- 1 Click the image to which you want to apply the Window/Level values.
- 2 Click the arrow beside the **W/L** icon on the main toolbar.



- 3 From the menu that is displayed, select the Window/Level values you want to apply.

---

**Note:** Not all **Window/Level presets** are listed. To apply presets not listed on the menu, see “Adjusting the Window/Level values” on page 2-42.

---

The Window/Level values are applied within the Window/Level scope of your choice. You can also select another scope. For details, see “[Specifying the Window/Level scope](#)” on page 2-40.

## Applying Window/Level values from the right-click menu

To apply Window/Level values from the right-click menu:

- Right-click the image to which you want to apply the Window/Level values, point to **Window/Level**, and then select the values you want to apply.

---

### Note:

- Whether the **Window/Level** option is displayed on the right-click menu depends on your right-click preferences. See “[Right-click menu preferences](#)” on page 8-7.
- The maximum number of listed [Window/Level presets](#) is preconfigured for your site. To apply presets not listed on the menu, see “[Adjusting the Window/Level values](#)” on page 2-42.

---

The Window/Level values are applied within the Window/Level scope of your choice. You can also change the scope. For details, see “[Specifying the Window/Level scope](#)” on page 2-40.

## Applying a Window/Level preset

Apply a Window/Level preset if you want to quickly adjust the image contrast and brightness. For details of Window/Level presets, see “[Window/Level presets](#)” on page 2-44.

## Indication of an applied preset

When a Window/Level preset is applied, its name is displayed as [text overlay](#) on the images. For details on text overlay, see “[Displaying or hiding text overlay](#)” on page 2-9.

## Applying a preset

You can apply a Window/Level preset from:

- The **Window/Level** panel ([Figure 2-18](#) on page 2-40)
- The main toolbar
- The right-click menu

For procedures, see “[Applying Window/Level values](#)” on page 2-44.

---

**Note:** You can also use your own [shortcuts](#) to apply Window/Level presets. To set up shortcuts, see “[Adding and modifying user shortcuts](#)” on page 8-10.

---

## Steps for this task

When you apply a Window/Level preset, presets that are associated with the current **modality/intensity unit** combination are listed. However, you may want to apply a non-listed preset in the following situations:

- There are more presets than the number of presets that can be listed, or
- The preset you want to apply is associated with another modality/intensity unit.

**Note:** The maximum number of listed **Window/Level presets** is configured for your site. For details, contact McKesson Support.

To apply a non-listed Window/Level preset:

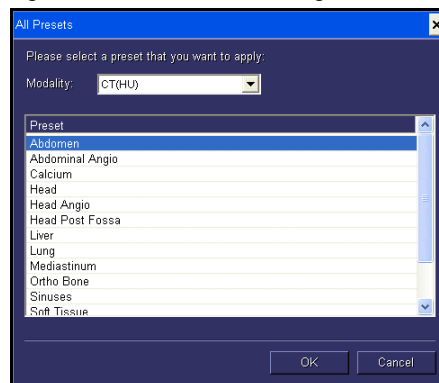
- 1 Click the image to which you want to apply the Window/Level values.
- 2 Click the arrow beside the **W/L** icon on the main toolbar.



- 3 From the menu that is displayed, select **Show All Presets**.

The **All Presets** dialog box is displayed, listing all the Window/Level presets for the modality/intensity associated with the image.

Figure 2-20 All Presets dialog box



- 4 Click the **Modality** box, and specify the modality/intensity unit for which you want to list the presets.
- 5 Click the preset you want to apply.
- 6 Click **OK**.

The Window/Level preset is applied within the Window/Level scope of your choice. You can also select another scope. For details, see [“Specifying the Window/Level scope”](#) on page 2-40.

## Adjusting the Window/Level values interactively

Using the mouse, you can adjust the **Window/Level** values, regardless of whether the **Window/Level** panel (*Figure 2-18* on page 2-40) is displayed.

### When the Window/Level panel is displayed

To adjust the Window/Level values from the **Window/Level** panel:

- 1 Click the **W/L** icon on the main toolbar.



The **Window/Level** panel is displayed.

- 2 Specify the Window/Level scope. See “[Specifying the Window/Level scope](#)” on page 2-40.
- 3 Hold the left mouse button, and drag the mouse on the image in the appropriate direction.

To...	Do this...
Adjust the Window	<ul style="list-style-type: none"> <li>• Drag the mouse left and right.</li> </ul>
Adjust the Level	<ul style="list-style-type: none"> <li>• Drag the mouse up and down.</li> </ul>

-or-

Click and drag the scroll bars on the panel.

To...	Do this...
Adjust the Window	<ul style="list-style-type: none"> <li>• Drag the horizontal scroll bar.</li> </ul>
Adjust the Level	<ul style="list-style-type: none"> <li>• Drag the vertical scroll bar.</li> </ul>

- 4 Release the left mouse button.

The Window/Level values are applied, and the values in the **W** and **L** boxes are updated.

### When the Window/Level panel is not displayed

To adjust the Window/Level values, when the **Window/Level** panel is not displayed:

- 1 Hold the right mouse button, and right-drag the mouse on the image in the appropriate direction.

To...	Do this...
Adjust the Window	<ul style="list-style-type: none"> <li>• Right-drag the mouse left and right.</li> </ul>
Adjust the Level	<ul style="list-style-type: none"> <li>• Right-drag the mouse up and down.</li> </ul>



- 2 Release the right mouse button.

The Window/Level values are applied within the Window/Level scope of your choice. You can also select another scope. For details, see “[Specifying the Window/Level scope](#)” on page 2-40.

## Entering the new Window/Level values

You can enter the new [Window/Level](#) values, to adjust the image contrast and brightness.

### Steps for this task

To specify the Window/Level values:

- 1 Click the image to which you want to specify the Window/Level values.
- 2 Click the **W/L** icon on the main toolbar.



The **Window/Level** panel is displayed. See [Figure 2-18](#) on page 2-40.

For other ways to display the **Window/Level** panel, see step 1 of “[Specifying the Window/Level scope](#)” on page 2-40.

- 3 Specify the Window/Level scope. See “[Specifying the Window/Level scope](#)” on page 2-40.
- 4 Enter the new Window/Level values in the **W** and **L** boxes.

The new Window/Level values are applied accordingly.

## Resetting the Window/Level values

You can reset the [Window/Level](#) of a [series](#), so that the Default Window/Level is applied to all images within the series. In addition, other presentation settings are reset simultaneously. See “[Resetting the series presentation](#)” on page 2-62.

For details on the Default Window/Level, see “[Default Window/Level](#)” on page 2-43.

## Selecting a LUT function to apply

When displaying images on the screen, Advanced Viewer uses a Look-Up Table (LUT) function to map image pixel values to display values.

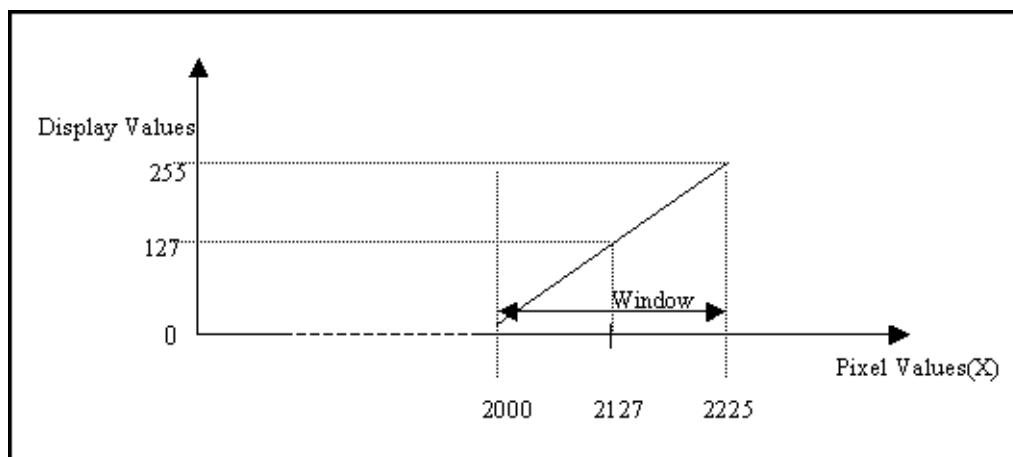
**Note:** Changing the LUT function does not affect the [Window/Level](#) values.

### Types of LUT functions

The following table describes the four LUT functions that you can apply.

LUT function	Meaning
Linear	Image pixel values are mapped to their corresponding display values in a linear fashion. See <a href="#">Figure 2-21</a> on page 2-51.
Gamma	A non-linear LUT function. For details, see <a href="#">“Optimizing image presentation with non-linear LUT functions”</a> on page 2-52.
H&D	A non-linear LUT function. For details, see <a href="#">“Optimizing image presentation with non-linear LUT functions”</a> on page 2-52.
Sigmoid	A non-linear LUT function. For details, see <a href="#">“Optimizing image presentation with non-linear LUT functions”</a> on page 2-52.
External	<p>Image pixel values are mapped to their display values using a Value of Interest (VOI) LUT provided by the <a href="#">image device</a>. The External LUT function is stored in the <a href="#">DICOM header</a>.</p> <p>A VOI LUT is associated with a particular view of the image and is used to outline certain properties of the image. Typically, it is used to enhance the contrast of a specific tissue type on the image. For example, for a CT image, the VOI LUT can specify a range of <a href="#">Hounsfield Units (HU)</a> for bone density, so that only image values for bone tissues are displayed.</p> <p><b>Note:</b> You can apply the External LUT only if a Source Window/Level is selected, and it is an external LUT. In addition, the External LUT is applied to the selected images only. For details on Source Window/Level, see <a href="#">“Source Window/Level”</a> on page 2-43.</p>

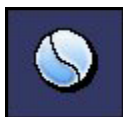
Figure 2-21 Linear LUT function



### Steps for this task

To select a LUT function:

- 1 Click the image to which you want to apply the LUT function.
- 2 Click the **W/L** icon on the main toolbar.



The **Window/Level** panel is displayed. See [Figure 2-18](#) on page 2-40.

For other ways to display the **Window/Level** panel, see step 1 of “[Specifying the Window/Level scope](#)” on page 2-40.

- 3 Click the **Type** box, and then select the LUT function you want to apply. For details on LUT functions, see “[Types of LUT functions](#)” on page 2-50.

Two outcomes are possible:

- If the External LUT function is selected, it is applied to the selected images.
- If another LUT function is selected, it is applied within the Window/Level scope of your choice. You can also select another scope. For details, see “[Specifying the Window/Level scope](#)” on page 2-40.

## Optimizing image presentation with non-linear LUT functions

This section describes how to apply a non-linear LUT function to images.

### In this section

This section contains the following topics:

Topic	See page
About non-linear LUT functions	2-52
Gamma, Hurter and Driffield (H&D), and Sigmoid functions	2-53
Steps for applying a non-linear LUT function	2-55

### About non-linear LUT functions

Non-linear LUT functions are applied in addition to **Window/Level** values. They enable you to optimize the image presentation, by applying a correction factor during image processing.

### Reasons for applying a non-linear function

Image quality can be affected by the following factors:

- Physical limits of the **image device**
- Image device configuration
- Acquisition protocol, which defines the relevant anatomical portions a **Technologist** captures images for a particular **procedure type**
- Default settings, such as over-exposure or under-exposure
- Patient's movement

Because of these factors, linear Window/Level processing does not always display the optimal image quality.

### Supported non-linear LUT functions

Advanced Viewer supports the following non-linear LUT functions:

- Gamma function
- Hurter and Driffield (H&D) function
- Sigmoid function

For details, see “**Gamma, Hurter and Driffield (H&D), and Sigmoid functions**” on page 2-53.

## Gamma, Hurter and Driffeld (H&D), and Sigmoid functions

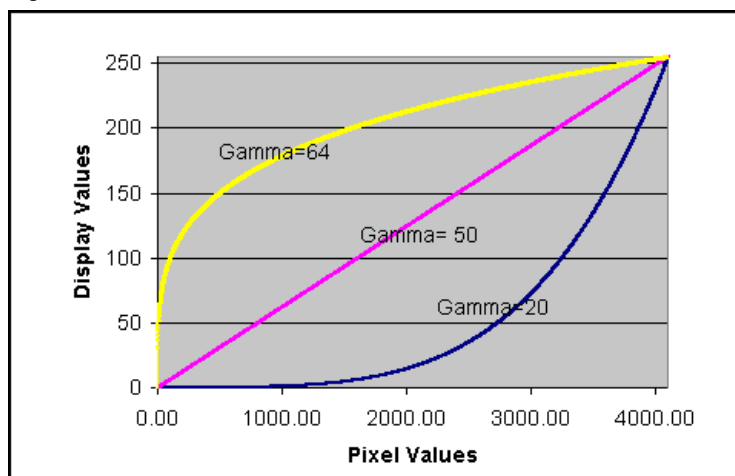
This section describes the non-linear LUT functions that you can apply to images. They include:

- Gamma function
- H&D function
- Sigmoid function

### Gamma function

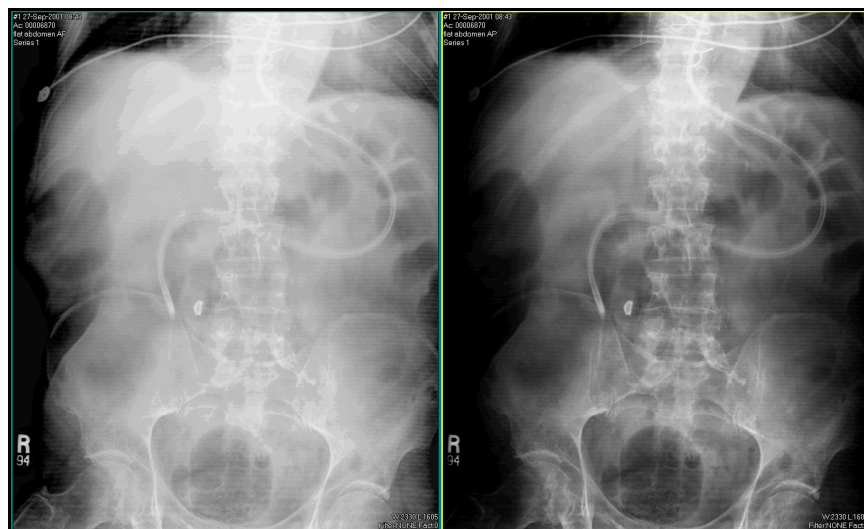
Figure 2-22 displays the Gamma function in the Advanced Viewer.

Figure 2-22 Gamma function



The Gamma function is affected by the parameter called the *Gamma* coefficient. By specifying the Gamma coefficient, you can modify the display values, until the optimal image presentation is obtained.

Figure 2-23 Abdomen image: linear function (left) and Gamma function (right)

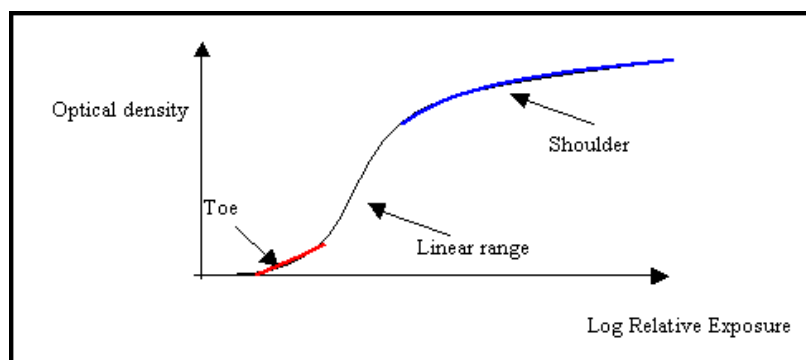


To apply the Gamma function to images, see “[Steps for applying a non-linear LUT function](#)” on page 2-55.

## Hurter and Driffield (H&D) function

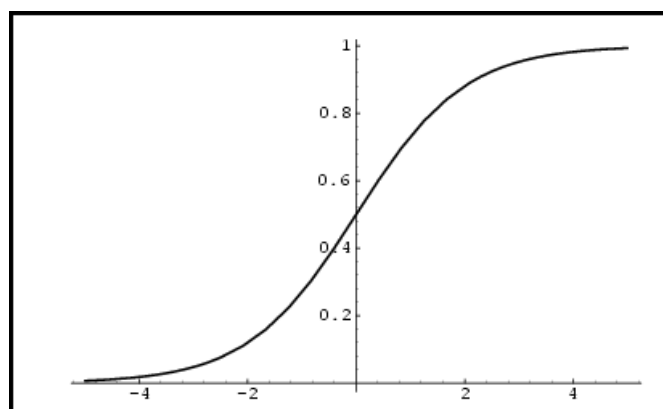
The H&D curve by Hurter and Driffield shows the relationship between the light/X-Ray exposure and optical density.

Figure 2-24 H&D curve



In McKesson Radiology™ Disc, the H&D curve is implemented by a modified sigmoid function, to represent the relationship between optical density and display values. This modified curve is called the H&D function.

Figure 2-25 H&D function

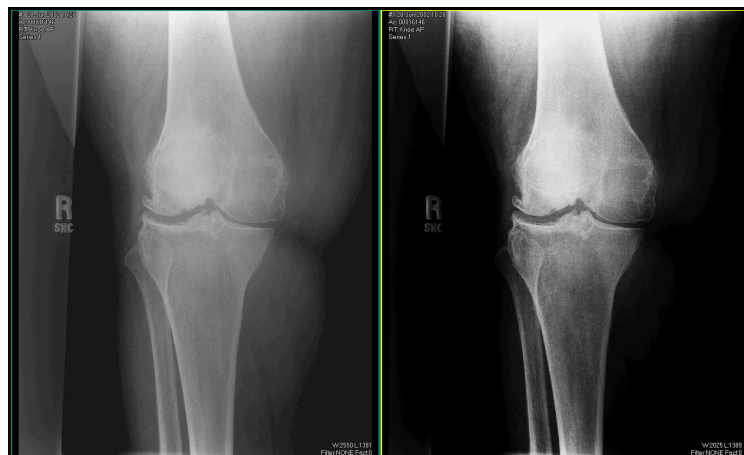


H&D function is affected by two parameters:

- The *Toe* coefficient shifts the function left and right, enabling you to view different tissue types.
- The *Shoulder* coefficient changes the steepness (also called slope) of the function, enabling you to modify the image contrast.

By specifying the Toe and Shoulder coefficients, you can modify display values for different [procedure types](#) or [body regions](#), until the optimal image presentation is obtained.

Figure 2-26 Knee image: linear function (left) and H&D function (right)



To apply the H&D function to images, see “[Steps for applying a non-linear LUT function](#)” on page 2-55.

### Sigmoid function

The Sigmoid function is affected by its curvature. By modifying the curvature, you can modify the display values for different procedure types or body regions, until the optimal image presentation is obtained.

To apply the Sigmoid function to images, see “[Steps for applying a non-linear LUT function](#)” on page 2-55.

## Steps for applying a non-linear LUT function

For an overview of non-linear LUT functions, see “[About non-linear LUT functions](#)” on page 2-52.

### Steps for this task

To apply a non-linear LUT function:

- 1 Click the image to which you want to apply the non-linear LUT function.
- 2 Click the **W/L** icon on the main toolbar.



The **Window/Level** panel is displayed. See [Figure 2-18](#) on page 2-40.

For other ways to display the **Window/Level** panel, see step 1 of “[Specifying the Window/Level scope](#)” on page 2-40.

- 3 Click the **Type** box, and then select the type of non-linear LUT function you want to apply. For details on the non-linear LUT functions, see “[Gamma, Hurter and Driffield \(H&D\), and Sigmoid functions](#)” on page 2-53.

The corresponding coefficients are displayed at the bottom of the **Window/Level** panel.

- 4 Specify the coefficients associated with the selected non-linear LUT function, by dragging the slider.

To...	Do this...
Apply the <b>Gamma</b> function	<ul style="list-style-type: none"> <li>Specify the <b>Gamma</b> coefficient to modify the display values, until the optimal image presentation is obtained. See <i>Figure 2-27</i> on page 2-56.</li> </ul>
Apply the <b>H&amp;D</b> function	<ul style="list-style-type: none"> <li>Specify the <b>Toe</b> coefficient and <b>Shoulder</b> coefficient to modify the display values for different <b>procedure types</b> or <b>body regions</b>, until the optimal image presentation is obtained. See <i>Figure 2-28</i> on page 2-56.</li> </ul>
Apply the Sigmoid function	<ul style="list-style-type: none"> <li>Specify the curvature of the Sigmoid function to modify the display values for different procedure types or body regions, until the optimal image presentation is obtained. See <i>Figure 2-29</i> on page 2-57.</li> </ul>

Figure 2-27 Applying the Gamma Coefficient



Figure 2-28 Applying the H&D Coefficients

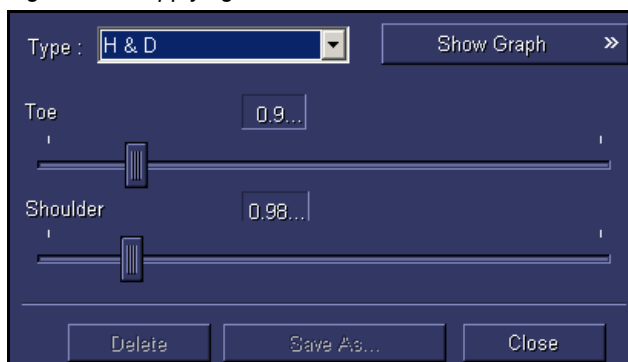
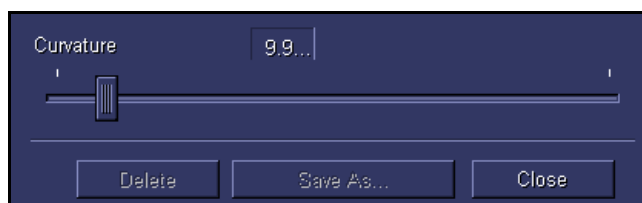




Figure 2-29 Applying the Sigmoid curvature



The non-linear LUT function is applied within the Window/Level scope of your choice. You can also select another scope. For details, see “[Specifying the Window/Level scope](#)” on page 2-40.

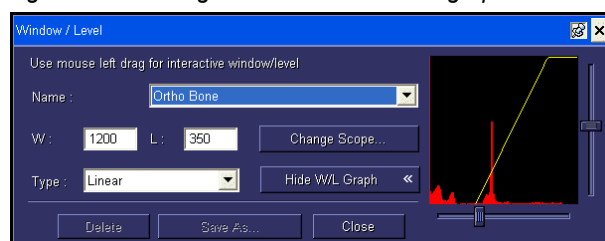
## Displaying and hiding the histogram and LUT function graph

While adjusting the image contrast and brightness, you can display and hide the following items in the **Window/Level** panel:

- The histogram that depicts the frequency distribution of image intensities. The horizontal axis in a histogram shows the pixel values; the vertical axis shows the pixel count.
- LUT function graph. The horizontal axis shows the pixel values; the vertical axis shows the display values.

The histogram and LUT function graph are drawn within the possible physical range. They are updated when you change the [Window/Level](#) values and/or LUT function.

Figure 2-30 Histogram and LUT function graph

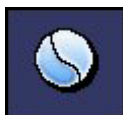


**Note:** The histogram and LUT function graph are intended for presentation purpose only. You cannot use them to change the image contrast and brightness.

### Steps for this task

To display or hide the histogram and LUT function graph:

- 1 Click the image whose histogram and LUT function graph you want to display or hide.
- 2 Click the **W/L** icon on the main toolbar.



The **Window/Level** panel is displayed. See [Figure 2-18](#) on page 2-40.

For other ways to display the **Window/Level** panel, see step 1 of “[Specifying the Window/Level scope](#)” on page 2-40.

- 3 Do one of the following:

To...	Do this...
Display the histogram and LUT function graph	<ul style="list-style-type: none"><li>Click <b>Show Graph</b>.</li></ul>
Hide the histogram and LUT function graph	<ul style="list-style-type: none"><li>Click <b>Hide Graph</b>.</li></ul>

The histogram and graph are displayed or hidden accordingly.

## Applying post processing

This section describes how to apply post processing to images.

### In this section

This section contains the following topics:

Topic	See page
<a href="#">About post processing</a>	2-59
<a href="#">Specifying the post processing scope</a>	2-59
<a href="#">Steps for applying post processing to images</a>	2-61

### About post processing

Processing can be applied to images after they have been captured and stored. Applying post processing enables you to enhance certain features of an image. For example, you can enhance a hairline fracture in a bone.

Post processing is typically applied to CT/DX/DR images.

Post processing is not available for digital mammography images.

### Sharpening and smoothening images

You can enhance certain features of an image, in the following ways:

- Sharpen the image, by increasing the contrast between adjacent pixels
- Smoothen the image, by decreasing contrast between adjacent pixels

For details, see [“Steps for applying post processing to images”](#) on page 2-61.

### Restriction for applying post processing to images

Post processing cannot be applied when the images are in Cine mode. For details on the series display modes, see [“Selecting the series display mode”](#) on page 3-7.

### Applying post processing to a region of interest (ROI)

Post processing can be applied to a small, magnified area of an image. For details, see [“Magnifying a region of interest \(ROI\)”](#) on page 2-24.

### Specifying the post processing scope

The post processing scope determines the extent to which post processing is applied. For an overview of post processing, see [“About post processing”](#) on page 2-59.

## Available post processing scopes

The following table describes the available post processing scopes in McKesson Radiology™ Disc.

Post processing scope	Meaning
Selected images	Apply post processing to selected images
Selected series	Apply post processing to images in the selected <b>series</b> .
All visible series	Apply post processing to images in all series that are displayed.

## Steps for this task

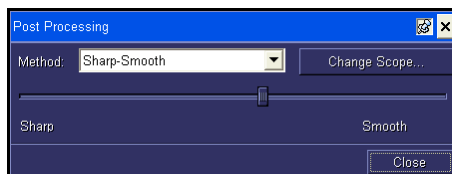
To specify the post processing scope:

- 1 Click the **Post** icon on the main toolbar.



The **Post Processing** dialog box is displayed.

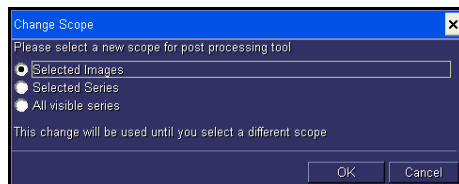
Figure 2-31 Post Processing dialog box



- 2 Click **Change Scope**.

The **Change Scope** dialog box is displayed.

Figure 2-32 Change scope dialog box



- 3 Select the post processing scope. For details, see “[Available post processing scopes](#)” on page 2-60.
- 4 Click **OK**.

## Steps for applying post processing to images

You can apply post processing to images, or remove it. For an overview of post processing, see [“About post processing”](#) on page 2-59.

### Note:

- Post processing not only can be applied to the entire image, but also to a small, magnified area of an image. For details, see [“Magnifying a region of interest \(ROI\)”](#) on page 2-24.
- Post processing can be removed from a [series](#), by resetting the presentation settings. For details, see [“Resetting the series presentation”](#) on page 2-62.

## Applying post processing

To apply post processing:

- 1 Click the **Post** icon on the main toolbar.



The **Post Processing** dialog box is displayed. See [Figure 2-31](#) on page 2-60.

For other ways to display the **Post Processing** dialog box, see step 1 of [“Specifying the post processing scope”](#) on page 2-59.

- 2 Click the **Method** box, and select **Sharp-Smooth**.
- 3 Specify the post processing scope. See [“Specifying the post processing scope”](#) on page 2-59.
- 4 Drag the slider in the appropriate direction, to adjust the contrast between adjacent pixels:

To...	Do this...
Sharpen the images more	<ul style="list-style-type: none"> <li>• Drag the slider to the left.</li> </ul>
Smooth the images more	<ul style="list-style-type: none"> <li>• Drag the slider to the right.</li> </ul>

- 5 Click **Close**.

## Removing post processing

To remove post processing:

- 1 Click the **Post** icon on the main toolbar.



The **Post Processing** dialog box is displayed. See [Figure 2-31](#) on page 2-60.

For other ways to display the **Post Processing** dialog box, see step 1 of “[Specifying the post processing scope](#)” on page 2-59.

- 2 Specify the images from which you want to remove post processing. See “[Specifying the post processing scope](#)” on page 2-59
- 3 Click the **Method** box, and select **None**.
- 4 Click **Close**.

## Resetting the series presentation

All the presentation settings of a series can be reset at once. You can:

- Zoom the images to fit the viewport
- Display the images with the standard orientation
- Apply the Default [Window/Level](#) to the images (See “[Default Window/Level](#)” on page 2-43)
- Remove post processing from the images (See “[About post processing](#)” on page 2-59)

### Steps for this task

To reset the presentation settings of a series:

- Right-click the viewport and select **Reset**.

---

**Note:** Whether the **Reset** option is displayed on the right-click menu depends on your right-click preferences. See “[Right-click menu preferences](#)” on page 8-7.

---

## Adding annotations

This section describes how to add annotations to images.

**Caution:** Any changes you make to an image do not persist after you close the study. Therefore, if you calibrate the measurement scale for an image, then close the study the image belongs to, the calibration does not persist. If you reopen the study and want to annotate the image, you must recalibrate the measurement scale.

### In this section

This section contains the following topics:

Topic	See page
Using the Annotation tools	2-64
Annotating images	2-68
Measuring images	2-76
Moving annotations	2-87
Resizing annotations	2-89
Modifying annotations	2-89
Deleting annotations	2-90

## Using the Annotation tools

This section describes the annotation tools, and how to use them.







### In this section

This section contains the following topics:








Topic	See page
List of the annotation tools	2-64
Selecting an annotation tool	2-65
Setting the annotation properties	2-66

### List of the annotation tools

The following table describes the annotation tools in McKesson Radiology™ Disc. To use the annotation tools to create [annotations](#), see “[Annotating images](#)” on page 2-68 and “[Measuring images](#)” on page 2-76.

Tool	Functionality
<b>Distance</b> 	Draw a line and measure the distance between the endpoints.
<b>Simple Angle</b> 	Draw and measure an angle in degrees.
<b>Cobb Angle</b> 	Draw and measure a <a href="#">Cobb angle</a> . This tool is used to measure spinal scoliosis.
<b>Elliptical ROI</b> 	Define an Elliptical Region of Interest (ROI), and measure its pixel intensity parameters, area, and perimeter. Elliptical ROI is exclusively used in CT studies.
<b>Point Analysis</b> 	Measure the pixel intensity of a point. This tool is exclusively used in CT studies.
<b>Arrow</b> 	Place arrows on an image.



Tool	Functionality (Continued)
<b>Text</b> 	Place comments on an image.
<b>Spine Labeling</b> 	Add vertebrae and disk labels. This tool is used in one of the following ways: <ul style="list-style-type: none"> <li>Label the <b>sagittal</b> or <b>coronal</b> view of MR spine study when scrolling through <b>axial</b> images</li> <li>Label the axial images if the sagittal or coronal view are not available or being viewed simultaneously</li> </ul>
<b>Ellipse</b> 	Place ellipses on an image.
<b>Cover</b> 	Mask an image, by covering an area of the image with a rectangle.
<b>Calibrate</b> 	Define the measurement scale.
<b>Eraser</b> 	Delete an annotation.
<b>Delete All</b> 	Delete all annotations from a single image, selected images, or all images in the <b>series</b> .

## Selecting an annotation tool

You can select an **annotation tool** from the main toolbar, or the image right-click menu.

—or—

Use your own **shortcuts** to select the tools. To set up shortcuts, see “Adding and modifying user shortcuts” on page 8-10.

### From the main toolbar

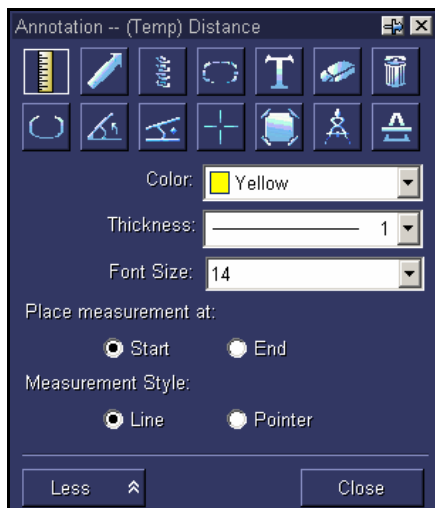
To select an annotation tool from the main toolbar:

- 1 Click the **Annotate** icon on the main toolbar.



The Annotation Control Panel is displayed.

Figure 2-33 Annotation Control Panel



- 2 Click the tool of your choice.

**Note:** Instead of step 1-2, click the arrow beside the **Annotate** icon, and then select the tool. The Annotation Control Panel is displayed with the tool selected.

### From the image right-click menu

To select an annotation tool from the image right-click menu:

- Right-click the image and point to **Annotate**, and then select the tool of your choice.

**Note:** Whether the **Annotate** option is displayed on the right-click menu depends on your right-click preferences. See “[Right-click menu preferences](#)” on page 8-7.

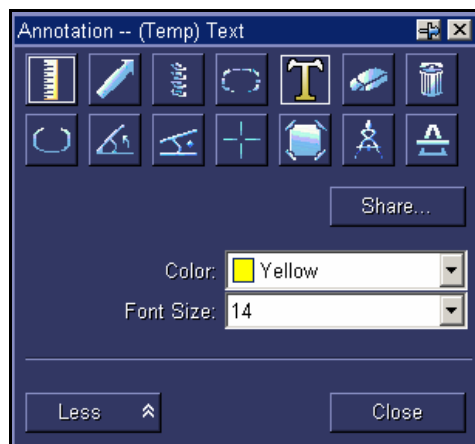
The Annotation Control Panel is displayed, with the tool selected.

### Setting the annotation properties

Once an **annotation tool** is **selected**, the properties of the tool are displayed on the Annotation Control Panel. For example, the **Text** tool consists of the following properties:

- Color
- Font size

Figure 2-34 Properties of the Text tool are displayed



Different annotation tools have different properties. You can set the properties before adding **annotations**. For details, see “**Annotating images**” on page 2-68 and “**Measuring images**” on page 2-76.

### Displaying the essential properties only, or all the properties

In addition, you can display the essential properties only, or all the properties.

To...	Do this...
Display the essential properties only	<ul style="list-style-type: none"> <li>Click <b>Less</b>.</li> </ul>
Display all properties	<ul style="list-style-type: none"> <li>Click <b>More</b>.</li> </ul>

## Annotating images

This section describes how to annotate images.

### In this section

This section contains the following topics:

Topic	See page
Restrictions for annotating images	2-68
Drawing arrows	2-68
Drawing ellipses	2-70
Masking images	2-71
Adding text	2-72
Adding spine labels with auto numbering	2-73

### Restrictions for annotating images

An image that was not annotated before it was exported can only be temporarily annotated in Advanced Viewer. Once you close the study, the annotations are removed.

### Drawing arrows

Draw an arrow to point to a **body region** or any other important detail on the image.

You need to:

- Select the **Arrow** tool
- Adjust the **Arrow** tool properties (if necessary)
- Draw the arrow

#### Step 1: Select the Arrow tool

To select the tool:

- 1 Click the **Annotate** icon on the main toolbar.



- 2 Click the **Arrow** tool on the Annotation Control Panel.



For other ways to select the tool, see “**Selecting an annotation tool**” on page 2-65.

## Step 2: Adjust the Arrow tool properties (if necessary)

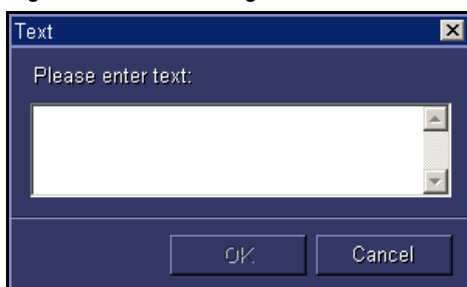
For an overview of annotation properties, see “[Setting the annotation properties](#)” on page 2-66.

To adjust the tool properties:

- 1 Specify if you want to attach text to the annotation:

To...	Do this...
Attach text	<ol style="list-style-type: none"> <li>1 Select the <b>Show text</b> check box.</li> <li>2 Click <b>Text</b>. The <b>Text</b> dialog box is displayed.</li> <li>3 Type the text that you want to attach.</li> <li>4 Click <b>OK</b>. The <b>Text</b> dialog box is closed.</li> </ol>
Not attach text	<ul style="list-style-type: none"> <li>• Clear the <b>Show text</b> check box.</li> </ul>

Figure 2-35 Text dialog box



- 2 Click the **Color** box, and specify the color of the annotation.
- 3 Click the **Thickness** box, and specify the line width.
- 4 Click the **Font size** box, and specify the font size of the attached text.
- 5 Specify where to put the arrow head. The following table describes the available options:

Option	Meaning
Start	<ul style="list-style-type: none"> <li>• Put the arrow head at the beginning of the line.</li> </ul>
End	<ul style="list-style-type: none"> <li>• Put the arrow head at the end of the line.</li> </ul>
Both	<ul style="list-style-type: none"> <li>• Put an arrow head at both ends.</li> </ul>

## Step 3: Draw the arrow

To draw an arrow:

- 1 Drag the mouse pointer across the area of the image where you want to place the arrow.
- 2 Release the mouse button.

An arrow is added to the image. If you have attached text to it, the text is displayed. For details, see step 2 of “[Step 2: Adjust the Arrow tool properties \(if necessary\)](#)” on page 2-69.

## Drawing ellipses

Draw an ellipse to highlight a region of interest.

You need to:

- Select the **Ellipse** tool
- Adjust the **Ellipse** tool properties (if necessary)
- Draw the ellipse

### Step 1: Select the Ellipse tool

To select the tool:

- 1 Click the **Annotate** icon on the main toolbar.



- 2 Click the **Ellipse** tool on the Annotation Control Panel.



For other ways to select the tool, see “[Selecting an annotation tool](#)” on page 2-65.

### Step 2: Adjust the Ellipse tool properties (if necessary)

For an overview of annotation properties, see “[Setting the annotation properties](#)” on page 2-66.

To adjust the tool properties:

To...	Do this...
Specify whether to attach text to the annotation	<ul style="list-style-type: none"><li>• Follow step 1 of “<a href="#">Step 2: Adjust the Arrow tool properties (if necessary)</a>” on page 2-69.</li></ul>
Specify the color of the annotation	<ul style="list-style-type: none"><li>• Follow step 2 of “<a href="#">Step 2: Adjust the Arrow tool properties (if necessary)</a>” on page 2-69.</li></ul>
Specify the thickness of the line width	<ul style="list-style-type: none"><li>• Follow step 3 of “<a href="#">Step 2: Adjust the Arrow tool properties (if necessary)</a>” on page 2-69.</li></ul>
Specify the font size of the attached text	<ul style="list-style-type: none"><li>• Follow step 4 of “<a href="#">Step 2: Adjust the Arrow tool properties (if necessary)</a>” on page 2-69.</li></ul>

### Step 3: Draw the ellipse

To draw an ellipse:

- 1 Drag the mouse pointer diagonally across the area of the image where you want to place the ellipse.
- 2 Release the mouse button.

An ellipse is placed on the image. If you have attached text to it in the properties, the text is displayed.

## Masking images

You can hide a particular area of an image, by covering it with a solid-color rectangle.

You need to:

- Select the **Cover** tool
- Adjust the **Cover** tool properties (if necessary)
- Place the cover

### Step 1: Select the Cover tool

To select the tool:

- 1 Click the **Annotate** icon on the main toolbar.



- 2 Click the **Cover** tool on the Annotation Control Panel.



For other ways to select the tool, see [“Selecting an annotation tool”](#) on page 2-65.

### Step 2: Adjust the Cover tool properties (if necessary)

For an overview of annotation properties, see [“Setting the annotation properties”](#) on page 2-66.

To adjust the tool properties:

To...	Do this...
Specify whether to attach text to the annotation	<ul style="list-style-type: none"> <li>• Follow step 1 of <a href="#">“Step 2: Adjust the Arrow tool properties (if necessary)”</a> on page 2-69.</li> </ul>
Specify the color of the annotation	<ul style="list-style-type: none"> <li>• Follow step 2 of <a href="#">“Step 2: Adjust the Arrow tool properties (if necessary)”</a> on page 2-69.</li> </ul>
Specify the font size of the attached text	<ul style="list-style-type: none"> <li>• Follow step 4 of <a href="#">“Step 2: Adjust the Arrow tool properties (if necessary)”</a> on page 2-69.</li> </ul>

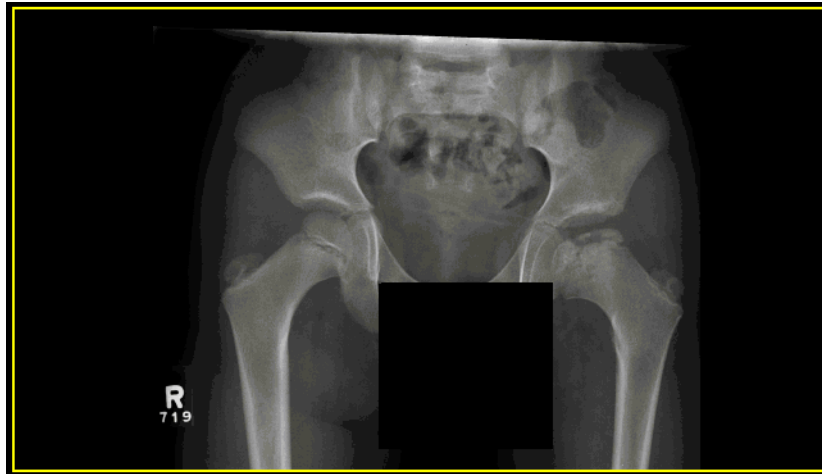
### Step 3: Place the cover

To place a cover on an image:

- 1 Drag the mouse pointer across the area that you want to cover.
- 2 Release the mouse button.

The defined area is covered by a rectangle. If you have attached text to it in the properties, the text is displayed.

Figure 2-36 The image is masked



## Adding text

Text can be added to an image.

To add text to an image, you need to:

- Select the **Text** tool
- Adjust the **Text** tool properties (if necessary)
- Add the text

### Step 1: Select the Text tool

To select the tool:

- 1 Click the **Annotate** icon on the main toolbar.



- 2 Click the **Text** tool on the Annotation Control Panel.



For other ways to select the tool, see [“Selecting an annotation tool”](#) on page 2-65.

### Step 2: Adjust the Text tool properties (if necessary)

For an overview of annotation properties, see [“Setting the annotation properties”](#) on page 2-66.



To adjust the tool properties:

To...	Do this...
Specify the color of the text	<ul style="list-style-type: none"> <li>Follow step 2 of “Step 2: Adjust the Arrow tool properties (if necessary)” on page 2-69.</li> </ul>
Specify the font size of the text	<ul style="list-style-type: none"> <li>Follow step 4 of “Step 2: Adjust the Arrow tool properties (if necessary)” on page 2-69.</li> </ul>

### Step 3: Add the text

To add text:

- 1 Click the image where you want to add the comment.
- 2 Type your comment in the text box. To insert a new line, press the ENTER key.
- 3 Click outside the text box.

The comment is added to the image.

## Adding spine labels with auto numbering

Spine labels can be added to an image, to identify vertebra or inter-vertebral disks. The **Spine Labeling** tool is used in one of the following ways:

- Label the **sagittal** or **coronal** view of a MR spine study when scrolling through **axial** images
- Label the axial images if the sagittal or coronal view are not available or being viewed simultaneously

You need to:

- Select the **Spine Labeling** tool
- Adjust the **Spine Labeling** tool properties (if necessary)
- Place the labels

You need to specify the first label only, and the direction in which the spine is labeled. After adding a label, McKesson Radiology™ Disc automatically chooses the next label.

### Vertebrae and disk labels that you can add

The following table lists the vertebrae and disk labels that you can add:

Vertebrae	Vertebrae labels	Disk labels
Cervical	C1 to C7	C1-C2 to C6-C7
Thoracic	T1 to T12	C7-T1 to T11-T12
Lumbar	L1 to L5; L6 if manually added	T12-L1 to L4-L5; L5-L6 if manually added

Vertebrae	Vertebrae labels	Disk labels
Sacrum	S1	L5-S1; L6-S1 if manually added

### Restriction for adding spine labels

Once a spine label is added, you cannot modify its name.

### Step 1: Select the Spine Labeling tool

To select the tool:

- 1 Click the **Annotate** icon on the main toolbar.



- 2 Click the **Spine Labeling** tool on the Annotation Control Panel.



For other ways to select the tool, see “[Selecting an annotation tool](#)” on page 2-65.

### Step 2: Adjust the Spine Labeling tool properties (if necessary)

For an overview of annotation properties, see “[Setting the annotation properties](#)” on page 2-66.

To adjust the tool properties:

- 1 Specify the type of labels that you want to place. The options are:
  - **Vertebrae**
  - **Disk**
- 2 Specify the direction used to place the labels. The options are:
  - **Head to foot**
  - **Foot to head**
- 3 Click the **Next label** box, and specify the first label to add.
- 4 Click the **Color** box, and specify the color of the labels.
- 5 Click the **Font size** box, and specify the font size of the labels.

### Step 3: Place the labels

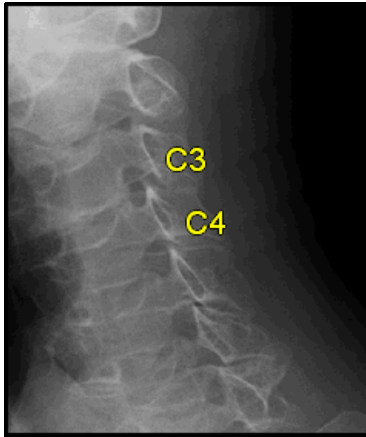
To place spine labels:

- 1 Click an image where you want to place the first label.

The label is placed in that location. The **Next label** box indicates the next available label that you can place.

- 2 Repeat step 1 as many time as necessary, to place the sequential labels.

*Figure 2-37 Spine labels*



## Measuring images

This section describes how to measure images.

### In this section

This section contains the following topics:

Topic	See page
Drawing lines and measuring linear distances	2-76
Calibrating the measurement scale	2-78
Adding and measuring simple angles	2-81
Adding and measuring Cobb angles	2-83
Adding and measuring the Elliptical Region of Interest (ROI)	2-84
Measuring the pixel intensity of a point	2-86

### Drawing lines and measuring linear distances

You can measure linear distances between two points on an image.

To measure linear distances between two points on an image, you need to:

- Select the **Distance** tool
- Adjust the **Distance** tool properties (if necessary)
- Draw the line

#### Step 1: Select the Distance tool

To select the tool:

- 1 Click the **Annotate** icon on the main toolbar.



- 2 Click the **Distance** tool on the Annotation Control Panel.



For other ways to select the tool, see [“Selecting an annotation tool”](#) on page 2-65.

## Step 2: Adjust the Distance tool properties (if necessary)

For an overview of annotation properties, see “Setting the annotation properties” on page 2-66.

To adjust the tool properties:

- 1 Click the **Color** box, and then specify the color of the annotation.
- 2 Click the **Thickness** box, and specify the line width.
- 3 Click the **Font size** box, and specify the font size of the measurement.
- 4 Specify where to place the measurement. The following table describes the available options:

Option	Meaning
Start	<ul style="list-style-type: none"><li>Place the measurement at the beginning of the line.</li></ul>
End	<ul style="list-style-type: none"><li>Place the measurement at the end of the line.</li></ul>

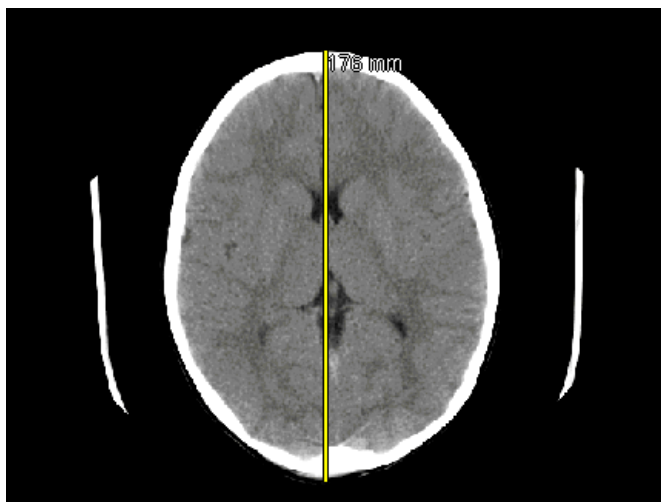
## Step 3: Draw the line

To measure a linear distance:

- 1 Drag the mouse pointer across the image where you want the line to appear.
- 2 Release the mouse button.

A line with the measurement it represents is displayed on the image.

Figure 2-38 A line with measurement



---

**Note:**

- Measurements smaller than 10 units are displayed with one decimal precision, for example, 8.7 mm. Measurements equal to or larger than 10 units are rounded off to the nearest integer (plain number). For example, 10.9 mm is expressed as 11 mm.
  - If the line contains no measurement unit, calibrate the scale. See [“Calibrating the measurement scale”](#) on page 2-78.
- 

## Calibrating the measurement scale

A measurement scale is required in the following cases:

- To measure linear distances (See [“Drawing lines and measuring linear distances”](#) on page 2-76)
- To measure the area and perimeter of the Elliptical ROI (See [“Adding and measuring the Elliptical Region of Interest \(ROI\)”](#) on page 2-84)

The measurement scale is calibrated individually for each image. It can be calibrated automatically or manually.

### Automatically calibrating the measurement scale

The measurement scale may be automatically calibrated from the image [DICOM header](#). If the scale indicator exists, the measurement scale for the image is automatically calibrated. For details, see [“Displaying or hiding the scale indicator”](#) on page 2-13.

### Manually calibrating the measurement scale

You need to calibrate the measurement scale only if the image does not contain it. To determine whether the image contains the measurement scale, use the **Distance** tool to measure a linear distance. See [“Drawing lines and measuring linear distances”](#) on page 2-76.

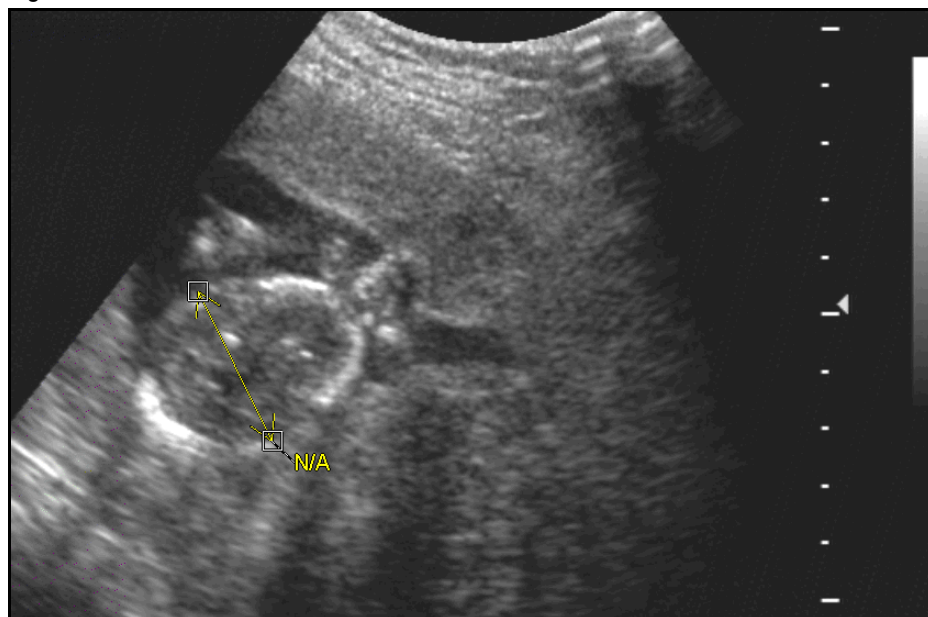
If the measurement unit is not displayed, the image does not contain the measurement scale. Typically, scanned film and digitized analog video images would not contain a measurement scale. Digitally acquired images should contain a scale. If this is not the case, please contact your modality vendor.

---

**Note:** To calibrate the measurement scale, the image must display an object of known size or dots that correspond to standard distances, such as the 1cm measurement on US images.

---

Figure 2-39 Measurement scale is not calibrated



To manually calibrate the measurement scale:

1 Select the **Calibrate** tool:

- Click the **Annotate** icon on the main toolbar.



- Click the **Calibrate** tool on the Annotation Control Panel.



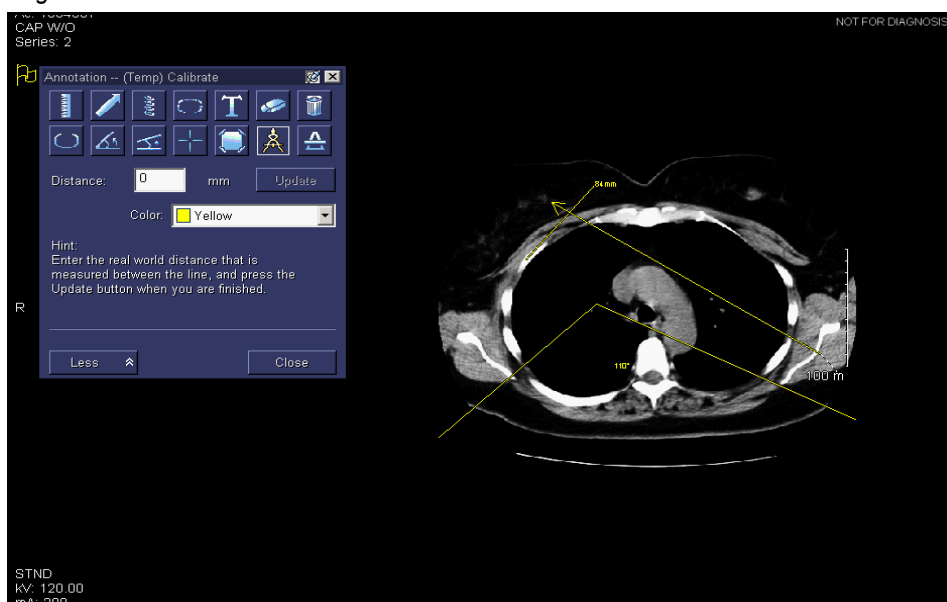
For other ways to select the tool, see [“Selecting an annotation tool”](#) on page 2-65.

2 Draw a line:

- Drag the mouse pointer across the image.
- Release the mouse button.

A line with a double-headed arrow is displayed on the image.

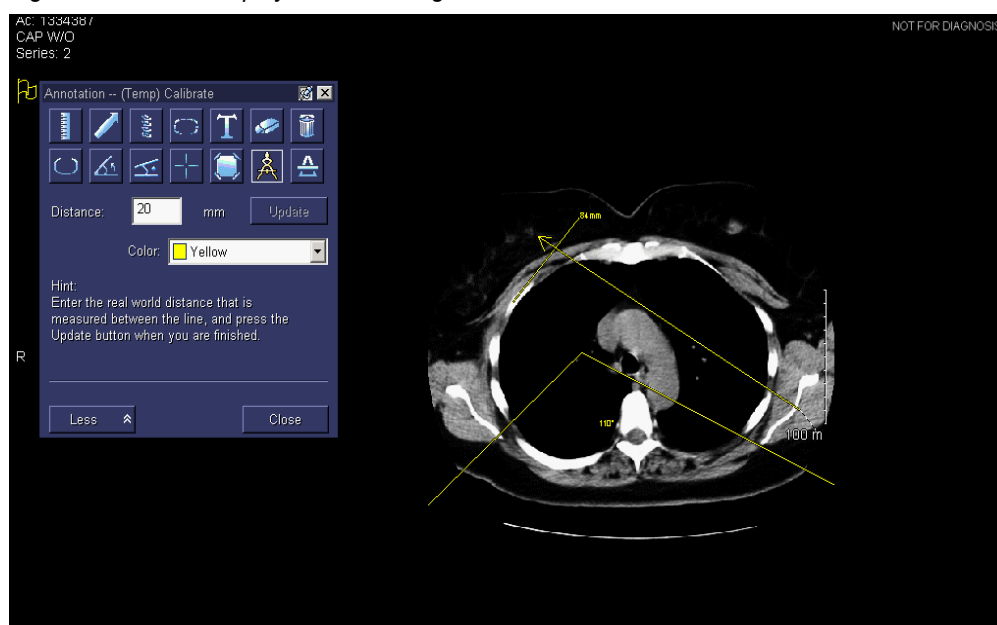
Figure 2-40 Draw a line to calibrate scale



- 3 Type the length of the line in the **Distance** box. Depending on your preferences, the measurement unit is expressed in **mm** or **cm**.
- 4 Click **Update**.

The measurement scale is added and displayed on the image.

Figure 2-41 Scale displayed on the image

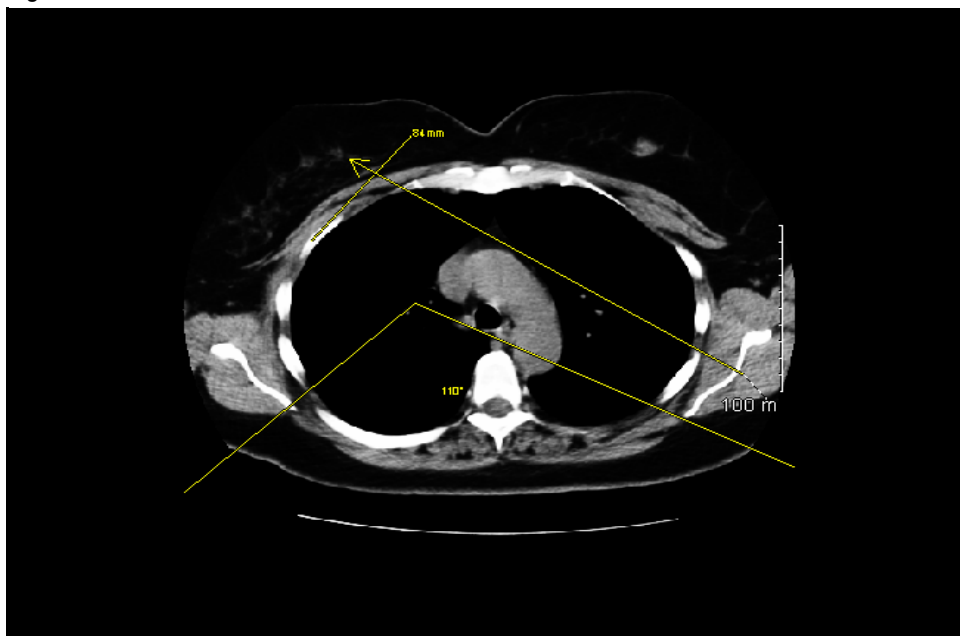


- 5 Draw a line to measure a linear distance on the image. Follow the steps in **"Drawing lines and measuring linear distances"** on page 2-76.

The line is displayed with the calibrated measurement.



Figure 2-42 Line with calibrated measurement



## Adding and measuring simple angles

You can draw two intersecting lines and measure the angle between them. For example, using the **Simple Angle** tool, you can measure a baby's hip. The angle is measured in degrees. To measure an angle between two non-intersecting lines, see [“Adding and measuring Cobb angles”](#) on page 2-83.

You need to:

- Select the **Simple Angle** tool
- Adjust the **Simple Angle** tool properties (if necessary)
- Draw and measure the angle

### Step 1: Select the Simple Angle tool

To select the tool:

- 1 Click the **Annotate** icon on the main toolbar.



- 2 Click the **Simple Angle** tool on the Annotation Control Panel.



For other ways to select the tool, see [“Selecting an annotation tool”](#) on page 2-65.

## Step 2: Adjust the Simple Angle tool properties (if necessary)

For an overview of annotation properties, see “Setting the annotation properties” on page 2-66.

To adjust the tool properties:

- 1 Follow steps 1-3 of “Step 2: Adjust the Distance tool properties (if necessary)” on page 2-77.
- 2 Specify where to place the measurement. The following table describes the available options.

Option	Meaning
Start	<ul style="list-style-type: none"><li>• Place the measurement at the beginning of the first line segment.</li></ul>
Vertex	<ul style="list-style-type: none"><li>• Place the measurement between the two line segments.</li></ul>
End	<ul style="list-style-type: none"><li>• Place the measurement at the end of the second line segment.</li></ul>

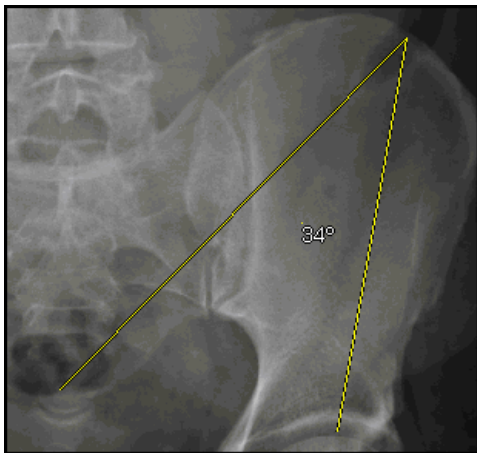
## Step 3: Draw and measure the angle

To draw and measure an angle:

- 1 Draw the first line segment (Start to Vertex).
  - Drag the mouse pointer across the image.
  - Release the mouse button.
- 2 Click where you want to place the end of the second line segment (Vertex to End).

An angle with the measurement it represents is displayed on the image. The measurement is rounded off to the nearest integer.

Figure 2-43 An angle with measurement



## Adding and measuring Cobb angles

A Cobb angle is the angle between two non-intersecting lines. Cobb angles are used to measure spinal scoliosis. They are measured in degrees. To measure an angle between two intersecting lines, see [“Adding and measuring simple angles”](#) on page 2-81.

You need to:

- Select the **Cobb Angle** tool
- Adjust the **Cobb Angle** tool properties (if necessary)
- Draw and measure the Cobb angle

### Step 1: Select the Cobb Angle tool

To select the tool:

- 1 Click the **Annotate** icon on the main toolbar.



- 2 Click the **Cobb Angle** tool on the Annotation Control Panel.



For other ways to select the tool, see [“Selecting an annotation tool”](#) on page 2-65.

### Step 2: Adjust the Cobb Angle tool properties (if necessary)

For an overview of annotation properties, see [“Setting the annotation properties”](#) on page 2-66.

To adjust the tool properties:

- Follow steps 1-3 of [“Step 2: Adjust the Distance tool properties \(if necessary\)”](#) on page 2-77.

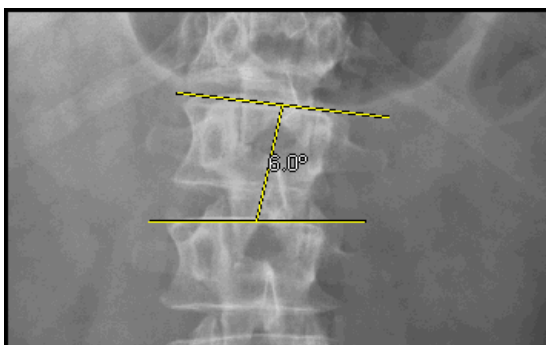
### Step 3: Draw and measure the Cobb angle

To draw and measure a Cobb angle:

- 1 Draw the first line segment.
  - Drag the mouse pointer across the image.
  - Release the mouse button.
- 2 Draw the second line segment.

A dotted line is displayed, connecting the two lines from the middle point. The Cobb angle measurement is displayed in the middle of the dotted line, rounded off to the nearest integer.

Figure 2-44 A Cobb angle with measurement



## Adding and measuring the Elliptical Region of Interest (ROI)

You can define an Elliptical region of interest (ROI), and measure its pixel intensity parameters, area, and perimeter. Pixel intensity enables you to determine the tissue type of the ROI. For details, see “[Use of the pixel intensity values](#)” on page 2-39. Elliptical ROI is exclusively used in CT studies.

You need to:

- Select the **Elliptical ROI** tool
- Adjust the **Elliptical ROI** tool properties (if necessary)
- Draw and measure the Elliptical ROI

## Values that you can measure

The following table describes the values that you can measure for the Elliptical ROI.

Value	Meaning
Average	The average pixel intensity values within the Elliptical ROI, in <a href="#">Hounsfield Units (HU)</a> or <a href="#">Optical Density (OD)</a> .
Area	The area of the Elliptical ROI.
Min/Max	The minimum and maximum pixel intensity values within the Elliptical ROI, in Hounsfield Units (HU) or Optical Density (OD).
Perimeter	The perimeter of the Elliptical ROI.
Std Dev	The standard deviation pixel intensity values within the Elliptical ROI, in Hounsfield Units (HU) or Optical Density (OD).

## Step 1: Select the Elliptical ROI tool

To select the tool:

- 1 Click the **Annotate** icon on the main toolbar.



- 2 Click the **Elliptical ROI** tool on the Annotation Control Panel.



For other ways to select the tool, see “[Selecting an annotation tool](#)” on page 2-65.

### Step 2: Adjust the Elliptical ROI tool properties (if necessary)

For an overview of annotation properties, see “[Setting the annotation properties](#)” on page 2-66.

To adjust the tool properties:

- 1 Select the check boxes that correspond to the types of values you want to display. For a description, see “[Values that you can measure](#)” on page 2-84.
- 2 Follow steps 1 and 2 of “[Step 2: Adjust the Distance tool properties \(if necessary\)](#)” on page 2-77.

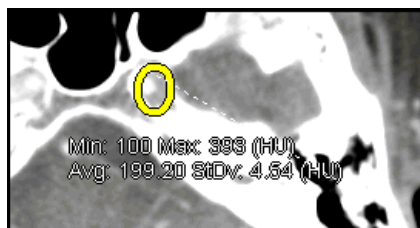
### Step 3: Draw and measure the Elliptical ROI

To measure an Elliptical ROI:

- 1 Drag the mouse pointer diagonally across the area of the image where you want the ellipse to appear.
- 2 Release the mouse button.

An Elliptical ROI is displayed with the values.

Figure 2-45 Elliptical ROI with values



**Note:** If the area and perimeter of the Elliptical ROI contain no measurement unit, calibrate the scale. See “[Calibrating the measurement scale](#)” on page 2-78.

## Measuring the pixel intensity of a point

You can measure the pixel intensity of a point on an image, to determine the tissue type of a very small region of interest (ROI). For details, see [“Use of the pixel intensity values”](#) on page 2-39. The measurement is exclusively used in CT studies.

You need to:

- Select the **Point Analysis** tool
- Adjust the **Point Analysis** tool properties (if necessary)
- Measure the intensity

### Restriction for measuring the pixel intensity of a point

The pixel intensity value is provided for your information only, and is not added to the diagnostic image as a persistent [annotation](#).

### Step 1: Select the Point Analysis tool

To select the tool:

- 1 Click the **Annotate** icon on the main toolbar.



- 2 Click the **Point Analysis** tool on the Annotation Control Panel.



For other ways to select the tool, see [“Selecting an annotation tool”](#) on page 2-65.

### Step 2: Adjust the Point Analysis tool properties (if necessary)

For an overview of annotation properties, see [“Setting the annotation properties”](#) on page 2-66.

To adjust the tool properties:

- 1 Click the **Color** box, and specify the color of the annotation.
- 2 Click the **Font size** box, and specify the font size of the measurement.

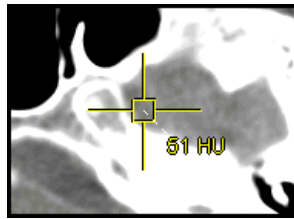
### Step 3: Measure the pixel intensity

To measure the pixel intensity of a point:

- Click the image where you want to measure the intensity.

The pixel intensity value of the point of interest is displayed, in [Hounsfield Units \(HU\)](#) or [Optical Density \(OD\)](#).

Figure 2-46 Pixel intensity value of a point



## Moving annotations

You can move the following **annotation** items on an image:

- An annotation with its measurements and attached text (if any), or
- The measurement and attached text only

If the annotation is shared, it is moved on all the images on which it appears.

### Moving an annotation with its measurement and attached text

To move an annotation with its measurement and attached text:

- 1 Select the **tool** used to create the annotation you want to move:
  - Click the **Annotate** icon on the main toolbar.



- Click the tool on the Annotation Control Panel.

For other ways to select the tool, see “**Selecting an annotation tool**” on page 2-65.

- 2 Click the annotation. The selected annotation is indicated by the square handles. See *Figure 2-47* on page 2-91.
- 3 Drag the selected annotation to the new location, and then release the mouse button.

The annotation is moved to the new location on the image. If the annotation has a measurement or text attached to it, the measurement or text is also moved with the annotation.

### Moving the measurement and attached text only

To move measurement and attached text only:

- 1 Select the **tool** used to create the annotation whose measurement and attached text you want to move:
  - Click the **Annotate** icon on the main toolbar.



- Click the tool on the Annotation Control Panel.

For other ways to select the tool, see [“Selecting an annotation tool”](#) on page 2-65.

- 2 Click the measurement or attached text. The selected measurement or attached text is indicated by the square handles, and the mouse pointer changes to a cross with arrows.
- 3 Drag the selected measurement or text to the new location, and then release the mouse button.

The measurement or text is moved to the new location on the image.



## Resizing annotations

You can resize the following **annotations**:

- Arrows
- Ellipses
- Covers
- Lines with linear distance measurement
- Simply angles
- Cobb angles
- Elliptical Region of Interest (ROI)

### Steps for this task

To resize an annotation:

- 1 Select the **tool** used to create the annotation you want to resize:

- Click the **Annotate** icon on the main toolbar.



- Click the tool on the Annotation Control Panel.

For other ways to select the tool, see “**Selecting an annotation tool**” on page 2-65.

- 2 Click the annotation. The selected annotation is indicated by the square handles. See *Figure 2-47* on page 2-91.
- 3 Drag the square handle, and then release the mouse button.

## Modifying annotations

Different **annotation tools** have different properties. For example, the **Text** tool consists of the following properties:

- Color
- Font size

The properties that you can modify for an annotation are displayed on the Annotation Control Panel. See *Figure 2-34* on page 2-67.

### Restrictions for modifying annotations

The following restrictions exist:

- If Power Scrolling is in use, annotations cannot be modified. For details, see “**Moving through a series using Power Scrolling**” on page 3-13.

## Steps for this task

To modify the annotation properties:

- 1 Select the tool that corresponds to the type of annotation you want to modify:

- Click the **Annotate** icon on the main toolbar.



- Click the tool on the Annotation Control Panel.

For other ways to select the tool, see “[Selecting an annotation tool](#)” on page 2-65.

- 2 Click the annotation. The selected annotation is indicated by the square handles. See [Figure 2-47](#) on page 2-91.

- 3 Modify the properties. For details, see the topic that corresponds to the annotation you want to modify:

- “[Annotating images](#)” on page 2-68
- “[Measuring images](#)” on page 2-76

The annotation is modified accordingly. If the annotation is shared, the modified annotation is displayed on the images on which it appears.

## Deleting annotations

You can delete an individual [annotation](#), or all annotations at once.

### Restrictions for deleting annotations

The following restrictions exist:

- If an image was annotated before it was exported, the annotation can only be temporarily deleted. Once you close the viewer, the annotation becomes available the next time the image is viewed.
- If an image was not annotated before it was exported, the annotation is permanently deleted.

### Deleting an individual annotation

To delete an individual annotation:

- 1 Select the **Eraser** tool:

- Click the **Annotate** icon on the main toolbar.



- Click the **Eraser** tool on the Annotation Control Panel.



For other ways to select the tool, see “[Selecting an annotation tool](#)” on page 2-65.

- 2 Click the annotation you want to delete.

The annotation is deleted.

## Deleting all annotations

You can delete all temporary annotations from:

- A single image only
- Selected images only
- All images in the [series](#)

---

**Caution:** Depending on the scope of deletion, a shared annotation can be deleted from a particular image only, or from all shared images. If you are not sure whether the annotation is shared, specify the scope of deletion before attempting to delete all annotations.

---

To delete all annotations:

- 1 Select the **Delete All** tool:

- Click the **Annotate** icon on the main toolbar.



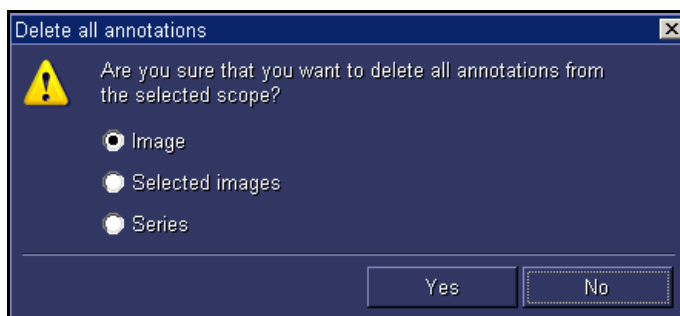
- Click the **Delete All** tool on the Annotation Control Panel.



For other ways to select the tool, see “[Selecting an annotation tool](#)” on page 2-65.

The **Delete all annotations** dialog box is displayed.

Figure 2-47 Delete all annotations dialog box



- 2 Specify the images from which you want to delete the annotations:

To...	Do this...
Delete all annotations from the current image	<ul style="list-style-type: none"> <li>• Click <b>Image</b>.</li> </ul>

---

To...	Do this... (Continued)
Delete all annotations from the selected images	<ul style="list-style-type: none"><li>Click <b>Selected images</b>.</li></ul>
Delete all annotations from the series	<ul style="list-style-type: none"><li>Click <b>Series</b>.</li></ul>

- 3 Click **OK**.

The annotations are deleted.

## Working with study presentations

This section describes how to apply study presentations.

### In this section

This section contains the following topics:

Topic	See page
About study presentations	2-93
Applying a presentation	2-93

## About study presentations

A study presentation is a collection of visual attributes associated with images. When a presentation is applied, the images are presented with these visual attributes.

### Attributes of a study presentation

A study presentation has the following attributes:

- Persistent [annotations](#), if any have been added
- Image style:
  - Region of Interest (ROI)
  - [Window/Level](#) values and applied LUT function (See [“About image contrast and brightness”](#) on page 2-38)
  - Image orientation

## Applying a presentation

A presentation can be applied automatically and manually.

### Automatically applying a presentation

A presentation is automatically applied when a study is opened. The images are presented according to the [display protocol](#) that pertains to the study. For details on display protocols, see [“About display protocols”](#) on page 6-2.

By default, the most recently saved presentation for the study is applied. However, if the display protocol contains specific values for the image presentation attributes, the specific values are applied. See [“Attributes of a study presentation”](#) on page 2-93.

### Manually applying a presentation

You can manually apply previously saved presentations on a case-to-case basis, for comparison or auditing purposes.

You can specify:

- Whether to apply a presentation to the entire study, or to selected **series** in the study
- Which attributes to apply

To manually apply a presentation to the study:

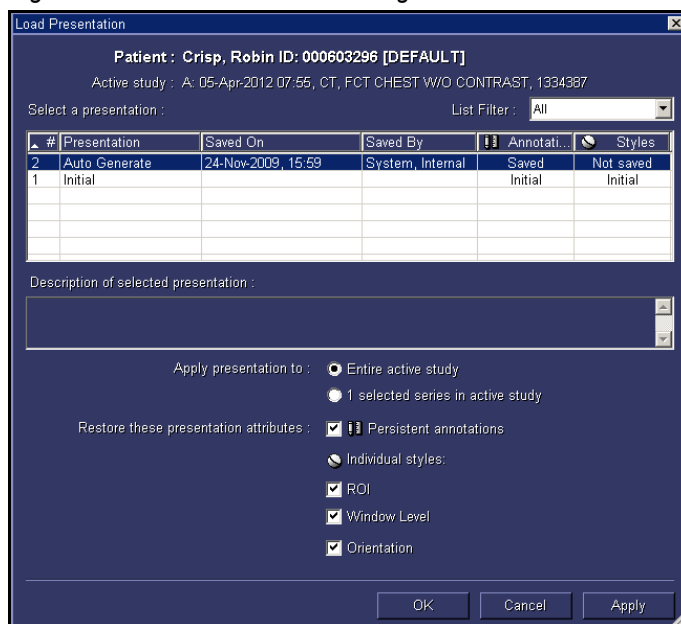
- 1 Click the **Presentation** icon on the main toolbar.



- 2 From the menu that is displayed, select **Load Presentation**.

The **Load Presentation** dialog box is displayed, listing all the saved presentations for the study.

Figure 2-48 Load Presentation dialog box



The following table describes the information:

Information	Meaning
#	<p>Presentation number. It is assigned sequentially:</p> <ul style="list-style-type: none"> <li>• <b>1</b> represents the initial presentation</li> <li>• <b>2</b> represents the presentation saved after the initial one. The larger the number, the more recently the presentation was saved.</li> </ul>
Presentation	Identification name of the presentation. It is the name that you entered when the presentation was saved.
Saved On	Date and time the presentation was saved.

Information	Meaning (Continued)
Saved By	Name of the user who saved the presentation.
Annotations	Whether the changes to the persistent <b>annotations</b> were saved in the presentation. If this is the initial presentation, <b>Initial</b> is displayed.
Styles	Whether changes to the image style (ROI, <b>Window/Level</b> , and image orientation) were saved in the presentation. If this is the initial presentation, <b>Initial</b> is displayed.  <b>Note:</b> Style changes pertain to both manual changes, or changes made by the <b>display protocol</b> .

- 3 Click the **List filter** box, and specify which presentations you want to list.

The following table describes the available filters.

Filter	Meaning
Last 5	List the following six presentations: <ul style="list-style-type: none"> <li>• The initial presentation</li> <li>• The five most recently saved presentations</li> </ul>
Last 10	List the following eleven presentations: <ul style="list-style-type: none"> <li>• The initial presentation</li> <li>• The ten most recently saved presentations</li> </ul>
Last 20	List the following 21 presentations: <ul style="list-style-type: none"> <li>• The initial presentation</li> <li>• The 20 most recently saved presentations</li> </ul>
All	List all the saved presentations for the study.

The corresponding presentations are listed.

- 4 Click the presentation you want to apply.

The description of the selected presentation, if available, is displayed. The description is optional, and is saved with the presentation.

- 5 Specify the scope of the presentation:

To...	Do this...
Apply the presentation to all images in the study	<ul style="list-style-type: none"> <li>• Click <b>Entire active study</b>.</li> </ul>

To...	Do this... (Continued)
Apply the presentation to images in the selected series only	<ul style="list-style-type: none"><li>Click <b>selected series in study</b>.</li></ul>

- 6 Specify the presentation attributes you want to apply to the images:

To...	Do this...
Apply the persistent annotations	<ul style="list-style-type: none"><li>Select the <b>Persistent annotations</b> check box.</li></ul>
Apply the image style	<ul style="list-style-type: none"><li>Select the check boxes that correspond to the styles you want to apply:<ul style="list-style-type: none"><li>- <b>ROI</b></li><li>- <b>Window Level</b></li><li>- <b>Orientation</b></li></ul></li></ul>

- 7 Do one of the following:

- To apply the presentation, click **Apply**.
- To apply the presentation and close the **Load Presentation** dialog box, click **OK**.



## Using Bookmarks

This section describes how to apply Bookmarks.

### In this section

This section contains the following topics:

Topic	See page
Understanding Bookmarks	2-97
Applying a Bookmark	2-98

## Understanding Bookmarks

A Bookmark saves the current displayed presentation of the **anchor study** and **reference studies** as a snapshot. Each Bookmark is persistently associated with the anchor study from the moment that it is saved. When a Bookmark is later applied for that study, all of the studies that were open are presented in exactly the same manner as when the Bookmark was saved. This includes stages, scroll positions, tiling, layout, Window/Level, Zoom/Pan, reorientation, and temporary annotations.

Uses of a Bookmark include:

- Simultaneous consultation between physicians. That is, two doctors having the study open at the same time while discussing it.
- Preparing for a presentation, such as by a radiology resident to a radiologist later in the day.
- Preparing for surgery. That is, a surgeon laying out and annotating the images in a manner appropriate for later use in the operating room.

### Attributes of a Bookmark

A Bookmark has the following attributes:

Attribute	Details
Layout	The layout includes: <ul style="list-style-type: none"><li>• Number of viewports on each screen</li><li>• Layout of images in each viewport</li><li>• <b>Series</b> placement in each viewport</li></ul>
Temporary annotations	<b>Annotations</b> that are not saved in a <b>study presentation</b> . For details on presentations, see “ <b>About study presentations</b> ” on page 2-93.

Attribute	Details (Continued)
Presentation settings	<p>The presentation settings include:</p> <ul style="list-style-type: none"> <li>• <b>Window/Level</b> for each viewport</li> <li>• Zoom/Pan settings for each viewport</li> <li>• Image orientation (rotation and flip) for each viewport</li> <li>• Series display mode for each viewport</li> <li>• Linking status for each viewport and registration information</li> </ul>
Information about all <b>Multi-Planar Reconstruction (MPR)</b> images	<p>The information includes:</p> <ul style="list-style-type: none"> <li>• Plane in which the MPR image are created</li> <li>• The range from which the MPR images are created</li> </ul>
<b>Cine clip</b> playback information	Playback mode, speed, and range

### Restrictions for applying Bookmarks

Existing bookmarks can be applied to studies, but new bookmarks cannot be saved in McKesson Radiology™ Disc. For details, see “**Applying a Bookmark**” on page 2-98.

For details on saving new bookmarks using McKesson Radiology Station™, refer to the *McKesson Radiology Station™ User's Guide*.

## Applying a Bookmark

You can apply a previously saved **Bookmark** to a study. All the studies to which the Bookmark applies are displayed exactly as they were when the Bookmark was saved. For details, see “**Attributes of a Bookmark**” on page 2-97.

**Note:** When you apply a Bookmark, McKesson Radiology™ Disc closes all studies to which the Bookmark does not apply.

### Steps for this task

To apply a Bookmark:

- 1 Click the **Bookmark** icon on the main toolbar.



- 2 From the menu that is displayed, select **Load Bookmark**.

The **Load Bookmark** dialog box is displayed, listing all the saved Bookmarks for the study.

The following table describes the information about the listed Bookmarks.

Information	Meaning
#	Bookmark number. It is assigned to a Bookmark sequentially. The larger the number, the more recently the Bookmark was saved.
Bookmark Name	Identification name of the Bookmark.
Saved On	Date and time the Bookmark was saved.
Saved By	Name of the user who saved the Bookmark.
Monitors	Monitor configuration on which the Bookmark was saved.

- 3 Click the **List filter** box, and specify which Bookmarks you want to list.

The following table describes the available filters.

Filter	Meaning
Last 5	List the five most recently saved Bookmarks associated with the study.
Last 10	List the ten most recently saved Bookmarks associated with the study.
Last 20	List the 20 most recently saved Bookmarks associated with the study.
All	List all the saved Bookmarks associated with the study.

The corresponding Bookmarks are listed.

- 4 Click the Bookmark you want to apply.

**Note:** A Bookmark can be applied to the monitor configuration on which it was saved, or similar monitor configuration only. Bookmarks that cannot be applied on the monitor configuration of your workstation are dimmed.

- 5 Do one of the following:

- To apply the Bookmark, click **Apply**.
- To apply the Bookmark and close the **Load Bookmark** dialog box, click **OK**.

The Bookmark is applied accordingly. **Bookmark in Use** is displayed on the **Display Protocol** button, to indicate that a Bookmark is applied to the study.



## Chapter 3 - Working with series

This section describes how to display and view series.

---

**Caution:** Any changes you make to a series do not persist after you close the study.

---

### In this section

This section contains the following topics:

Topic	See page
Displaying series	3-2
Navigating a series	3-12
Cycling series	3-15
Re-ordering series	3-18
Setting screen and viewport layout	3-19
Working with linked series	3-21

## Displaying series

This section describes how to display series. You can specify which images within the series to view, and in which mode to view them.

### In this section

This section contains the following topics:

Topic	See page
Displaying a series in a viewport	3-2
Displaying all images and all flagged images in a viewport	3-3
Displaying a series in a separate window	3-4
Selecting the series display mode	3-7
Specifying the series viewing scope	3-9
Moving series between viewports	3-10

## Displaying a series in a viewport

You can manually display a [series](#) of your interest in a viewport. In addition, you can display the same series in multiple viewports with different presentation settings, for comparison purposes. For an overview of the viewports, see [“Understanding viewports”](#) on page A-18.

A series can be displayed in a viewport, in one of the following ways:

- Use the Thumbnail toolbar
- Use the Thumbnail dialog box

---

**Note:** In addition to displaying a series in a viewport, you can display a series in a Zoom window or Survey window. See [“Displaying a series in a separate window”](#) on page 3-4.

---

### Displaying a series using the Thumbnail toolbar

For details on the Thumbnail toolbar, see [“About the Thumbnail toolbar”](#) on page A-12.

To display a series in a viewport using the Thumbnail toolbar:

- 1 Click the viewport in which you want to display a series.
- 2 Click the thumbnail representing the series you want to display.

## Displaying a series using the Thumbnail dialog box

For details on the Thumbnail dialog box, see “[Thumbnail dialog box](#)” on page A-16.

To display a series in a viewport using the Thumbnail dialog box:

- 1 At the top of the viewport in which you want to display a series, click the Series Selector button. The button indicates the currently displayed series in the viewport.



The Thumbnail dialog box is displayed.

- 2 Click the thumbnail representing the series you want to display.

The Thumbnail dialog box is closed, and the series is displayed in the viewport.

## Displaying all images and all flagged images in a viewport

You can display all images within the study, or all flagged images, in a viewport.

### Restrictions for displaying all images

Studies associated with some [modalities](#), for example, CT and MR, can contain many images. For this reason, your site may be configured so that you cannot display all images within a study. For details on your site configuration, contact McKesson Support.

The **All Images** button or **All Images** label is displayed to the left of the Thumbnail toolbar.

Displayed on Thumbnail toolbar	Meaning
<b>All Images</b> button 	All images within the study can be displayed. For details, see “ <a href="#">Displaying all images in a viewport</a> ” on page 3-3.
<b>All Images</b> label 	Indicates that all images of a study cannot be displayed.

### Displaying all images in a viewport

To display all the study images in a single viewport:

- 1 Click the viewport in which you want to display all the study images.
- 2 Click the **All Images** button. The button is located to the left of the thumbnails.



–or–

Instead of steps 1-2, drag the **All Images** button into the viewport of your choice.

## Displaying all flagged images

To display all the flagged images a study contains, in a single viewport:

- 1 Click the viewport in which you want to display all the flagged images.
- 2 Click the **Flagged Images** button. The button is located above the **All Images** button.



—or—

Instead of steps 1-2, drag the **Flagged Images** button into the viewport of your choice.

## Displaying a series in a separate window

This section describes how to display a series in a separate window.

### In this section

This section contains the following topics:

Topic	See page
About displaying a series in a separate window	3-4
Steps for displaying a series in a separate window	3-6

### About displaying a series in a separate window

After displaying a series in a viewport, you can display it in a window that rests on top of the viewports. In this window, you can make temporary changes to images, and then close it without affecting the state of images displayed in the viewports. For details, see “Steps for displaying a series in a separate window” on page 3-6.

### Zoom window and Survey window

The following table describes the two types of windows in which you can display a series.

Window	Description
Zoom window	<p>Images are displayed on top of one another. See <i>Figure 3-1</i> on page 3-5.</p> <p>A Zoom window is typically used for zooming the displayed images temporarily. For details, see “Zooming images” on page 2-18.</p> <p>You can display multiple Zoom windows on each monitor.</p>



Window	Description
Survey window	<p>Images are tiled. See <i>Figure 3-2</i> on page 3-6.</p> <p>A Survey window is typically used for changing the image layout temporarily. For details, see “<a href="#">Setting the viewport layout</a>” on page 3-20.</p> <p>You can display one Survey window per monitor only. In addition, you cannot move a Survey window.</p> <hr/> <p><b>Note:</b> A Survey window displays series that contains multiple images only. If the series contains one image, a Zoom window is displayed instead.</p>

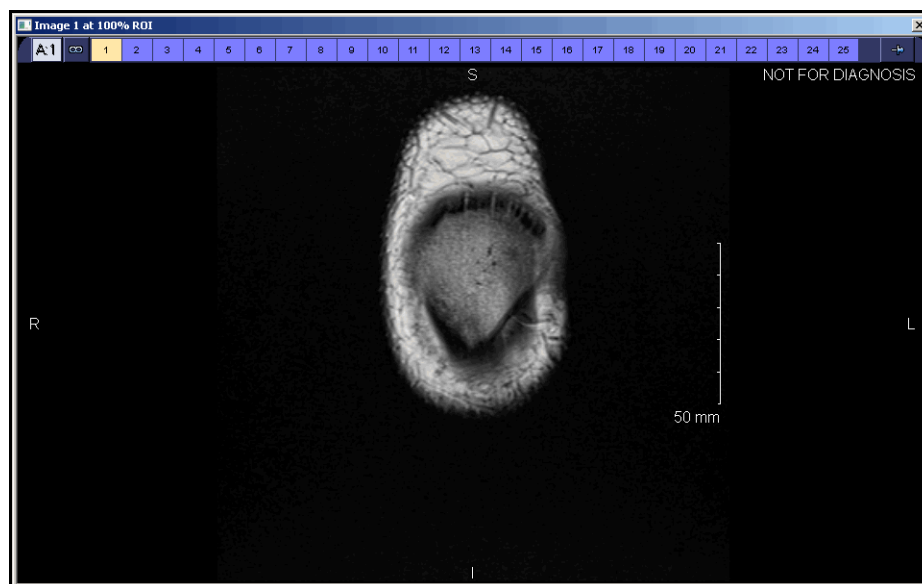
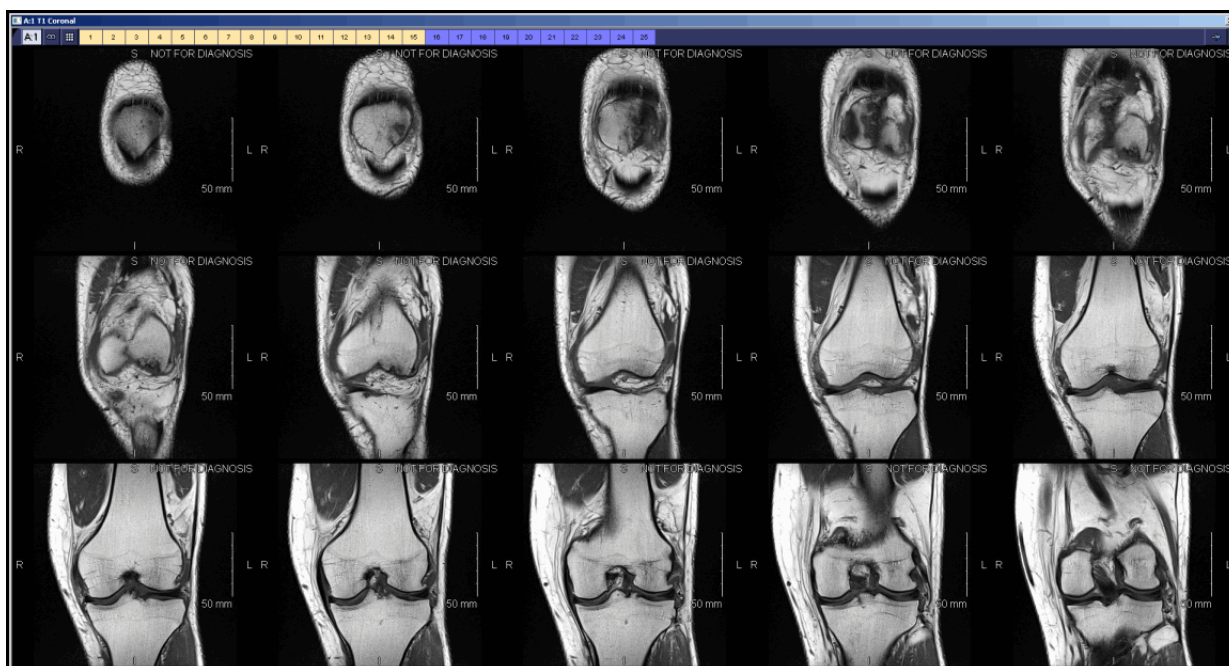
*Figure 3-1 Zoom window*

Figure 3-2 Survey window



## Steps for displaying a series in a separate window

A Zoom window or Survey window can be displayed from:

- The main toolbar
- The Thumbnail toolbar
- The right-click menu

### Display a Zoom window or Survey window from the main toolbar

To display a Zoom window or Survey window from the main toolbar:

- 1 Click the viewport that holds the series you want to display in a separate window.
- 2 Click the arrow beside the **Zoom** icon on the main toolbar.



- 3 From the menu that is displayed, specify the window in which to display the series.

To...	Do this...
Display the series in a Zoom window	<ul style="list-style-type: none"> <li>• Select <b>Open in Zoom window</b>.</li> </ul>
Display the series in a Survey window	<ul style="list-style-type: none"> <li>• Select <b>Open in Survey window</b>.</li> </ul>

## Displaying a Zoom window or Survey window from the Thumbnail toolbar

To display a Zoom window or Survey window from the Thumbnail toolbar:

- Right-click the thumbnail, and then select **Open in Zoom window** or **Open in Survey window**.

## Displaying a Zoom window or Survey window from the right-click menu

To display a Zoom window or Survey window from the right-click menu:

- Right-click the viewport and point to **Zoom**, and then select the option.

---

**Note:** Whether the **Zoom** option is displayed on the right-click menu depends on your right-click preferences. See “[Right-click menu preferences](#)” on page 8-7.

---

## Selecting the series display mode

Images have two [series](#) display modes.

---

**Note:** Cross-sectional images can also be displayed as [multi-planar reconstruction \(MPR\)](#) images. For details, see “[Creating MPR images](#)” on page 2-32.

---

## Available series display modes

The following table describes the available series display modes.

Series display mode	Meaning
Standard	<p>Still images are displayed.</p> <p>You can scroll through a series in Standard mode, or jump to a specific image. For details, see “<a href="#">Navigating a series</a>” on page 3-12.</p>
Cine	<p>Images are displayed as a sequence of frames, as if you are viewing a <a href="#">cine clip</a>. For details on cine clips, see “<a href="#">Working with cine clips</a>” on page 4-1.</p> <hr/> <p><b>Note:</b> Series containing only one image cannot be displayed in Cine mode.</p> <hr/>

## Steps for this task

To select the series display mode:

- 1 Click the **Display Mode** icon at the top of the viewport. The **Display Mode** icon indicates the types of images currently displayed. For details, see “[Specifying the series viewing scope](#)” on page 3-9.



---

**Note:** The **Display Mode** icon is not displayed if the series contains only one image.

---

- 2 From the menu that is displayed, select the series display mode of your choice.

## Specifying the series viewing scope





The series viewing scope determines which images are displayed in the viewports. You can:

- Display all images within a **series**
- Display selected images within a series only. For details, see “**Selecting and deselecting images**” on page 2-5.
- Display flagged images within a series only, to view images that are clinically significant. A flagged image can be identified by the red triangle on the bottom of its chit. For details, see “**Flagging and unflagging images**” on page 2-7.

### Steps for this task

To specify the series viewing scope:

- 1 Click the **Display Mode** icon at the top of the viewport. The **Display Mode** icon indicates the types of images currently displayed.

Icon	Meaning
	All images in the series are displayed in the viewport.
	Selected images in the series are displayed in the viewport.
	Flagged images in the series are displayed in the viewport.
	<b>Multi-planar reconstruction (MPR)</b> images are displayed in the viewport.

**Note:** The **Display Mode** icon is not displayed if the series contains only one image.

- 2 From the menu that is displayed, select the option of your choice:

To...	Do this...
Display all images	• Select <b>All Images</b> .
Display selected images only	• Select <b>Selected Images Only</b> .
Display flagged images only	• Select <b>Flagged Images Only</b> .

The images in the series are displayed accordingly.

## Moving series between viewports

You can quickly move a **series** from one viewport to another. For an overview of the viewports, see “**Understanding viewports**” on page A-18.

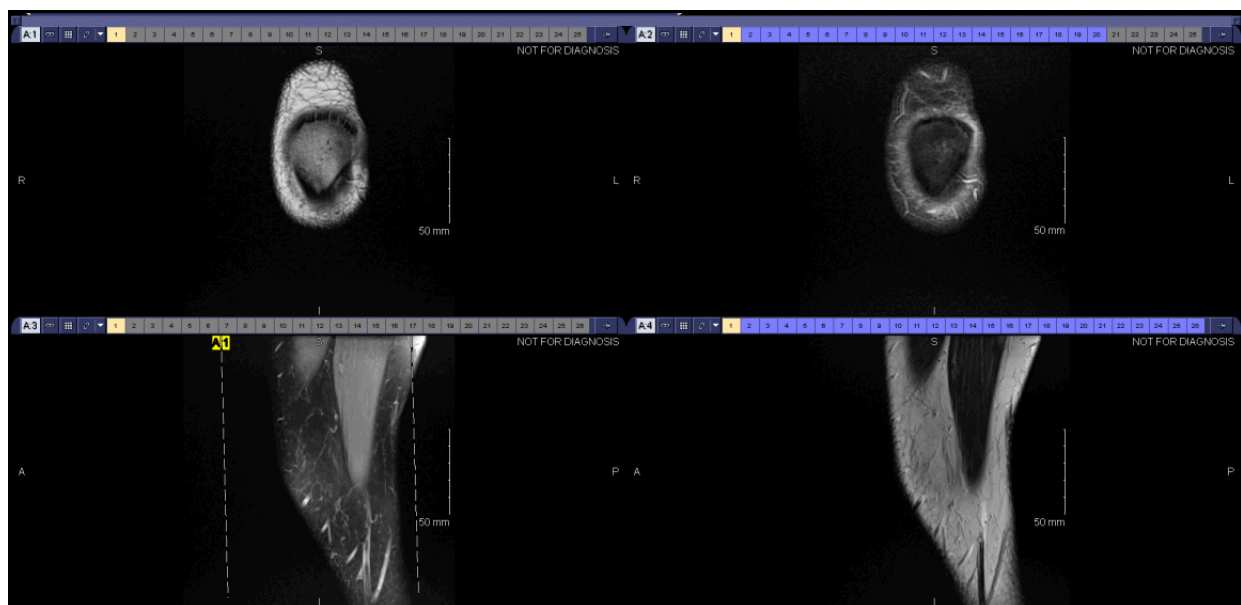
### Steps for this task

To move a series into a new viewport:

- Drag the viewport that contains the series you want to move, to the destination viewport.

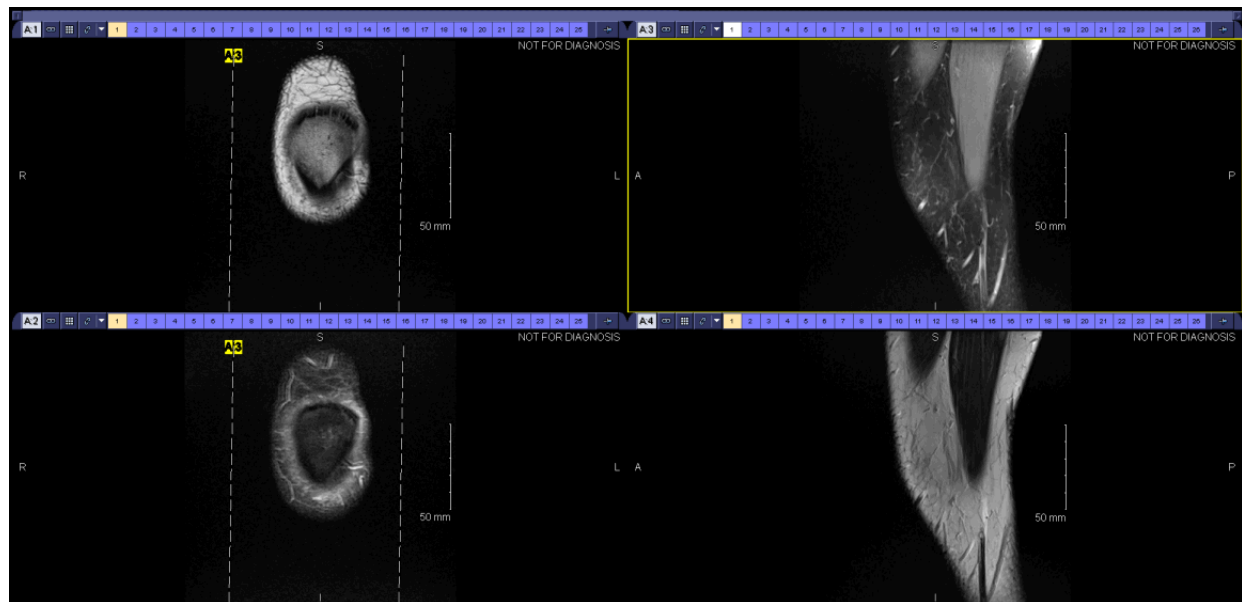
For example, in *Figure 3-3*, series 1, 2, 3, and 4 are displayed in viewports 1, 2, 3, and 4 respectively.

*Figure 3-3 Series 1, 2, 3, and 4 are displayed*



In *Figure 3-4*, series 3 is moved from viewport 3 to viewport 2.

Figure 3-4 Series 1, 3, 2, and 4 are displayed



## Navigating a series

This section describes how to navigate a series.

### In this section

This section contains the following topics:

Topic	See page
Scrolling through a series	3-12
Jumping to a specific image	3-13
Moving through a series using Power Scrolling	3-13

## Scrolling through a series

When a **series** is displayed in a viewport, you can scroll through the series to review the images within.

---

**Warning:** To ensure that all images that you want to view are displayed, and that no image is unintentionally skipped, first click the image, and then rotate the mouse wheel backward or forward, depending on the direction in which you want to scroll through the series.

---

If the series you scroll through shares a spatial relationship with another series, you can display the cross-reference lines, to view the intersecting location of the series with respect to the related series. See “**Displaying or hiding cross-reference lines**” on page 2-14.

### Special consideration: scrolling through a linked series

Series that contain cross-sectional images can be linked. See “**Working with linked series**” on page 3-21.

---

**Note:**

- The linked series must share a spatial relationship in order to scroll simultaneously.
  - Series linking does not apply to series in a Zoom window or Survey window. For details, see “**Zoom window and Survey window**” on page 3-5.
- 

When multiple series are linked, while you scroll through the active series, the corresponding images are displayed in the linked series. The corresponding images in this context are slices that have the closest spatial position to the active image in the viewport where the scrolling takes place.

---



**Warning:** To ensure that all images you want to view are displayed, scroll through each series individually.

---



## Steps for this task

To scroll through a series:

To...	Do this...
Scroll up the series	<ul style="list-style-type: none"> <li>Do one of the following:               <ul style="list-style-type: none"> <li>Rotate the mouse wheel up</li> <li>Click the <b>Previous</b> icon on the main toolbar.</li> </ul> </li> </ul> 
Scroll down the series	<ul style="list-style-type: none"> <li>Do one of the following:               <ul style="list-style-type: none"> <li>Rotate the mouse wheel down</li> <li>Click the <b>Next</b> icon on the main toolbar.</li> </ul> </li> </ul> 

**Note:** You can also use Power Scrolling, to quickly scroll through a large multi-slice series. For details, see [“Moving through a series using Power Scrolling”](#) on page 3-13.

## Jumping to a specific image

You can quickly display a particular image within a [series](#).

## Steps for this task

To jump to a specific image:

- Click the chit that corresponds to the specific image.

If the chit represents a group of images within the series, click the chit to display the first image within the group, and then rotate the mouse wheel backward to scroll through the rest of the images. For an overview of the viewports, see [“Understanding viewports”](#) on page A-18.

## Moving through a series using Power Scrolling

Power Scrolling enables you to quickly scroll through a large multi-slice [series](#). Typically, large multi-slice series exist within cross-sectional body scans, which are CT and MR studies for the chest, abdomen, and pelvis. A multi-slice series contains 200 or more cross-sectional images.

## Prerequisite

Power Scrolling must be enabled in your Power Scrolling preferences. See “[Power Scrolling preferences](#)” on page 8-5.

## Step for this task

To scroll through a series using Power Scrolling:

- 1 Start Power Scrolling in one of the following ways:

- Press, and then release, the mouse wheel or middle mouse button
- Hold down the mouse wheel or middle mouse button

How to start Power Scrolling depends on your preferences. For details, see “[Power Scrolling preferences](#)” on page 8-5.

- 2 Scroll through the series, according to the Power Scroll Mode in your preferences:

If...	Then...
Power Scroll Mode is Proportional (Scrolling speed depends on how fast you move the mouse)	<ul style="list-style-type: none"> <li>• Move the mouse in one of the following ways: <ul style="list-style-type: none"> <li>- Left and right</li> <li>- Up and down</li> </ul> </li> </ul> <p>The direction to scroll depends on your preferences. For details, see “<a href="#">Power Scrolling preferences</a>” on page 8-5.</p>
Power Scroll Mode is Velocity (Scrolling speed depends on the location of the mouse pointer)	<ul style="list-style-type: none"> <li>• Move the mouse in one of the following ways: <ul style="list-style-type: none"> <li>- Left and right of the image center</li> <li>- Above or below the image center</li> </ul> </li> </ul> <p>The direction to scroll depends on your preferences. For details, see “<a href="#">Power Scrolling preferences</a>” on page 8-5.</p>

- 3 Press the mouse wheel or click the middle mouse button to finish Power Scrolling.

## Cycling series

This section describes how to cycle series.

### In this section

This section contains the following topics:

Topic	See page
About cycling series	3-15
Cycling series examples	3-16
Pinning and unpinning a viewport	3-16
Steps for cycling series	3-18

### About cycling series

Cycling **series** enables you to quickly page through series. As a result, you do not need to manually display the series one-by-one, by dragging the corresponding thumbnails into the viewports.

Series can be cycled in two directions:

Cycle direction	Meaning
Forward	The next set of series in the study are displayed.
Backward	The previous set of series in the study are displayed.

You can cycle series for a study. In addition, if you are comparing studies belonging to the same patient, you can cycle series for the studies simultaneously. For details, see “**Cycling series examples**” on page 3-16 and “**Steps for cycling series**” on page 3-18.

### Restrictions for cycling series

The following restrictions exist:

- A viewport is not used for cycling series in one of the following situations:
  - You manually specify that the viewport is not used for cycling series. For details, see “**Pinning and unpinning a viewport**” on page 3-16.
  - **Multi-planar reconstruction (MPR)** images or all flagged images are displayed. For details, see “**Creating MPR images**” on page 2-32.
  - All the images in the study are displayed as a series in the viewport.
- Depending on the **display protocol** currently applied to the study, empty viewports may not be used for cycling series. For details, see “**About display protocols**” on page 6-2.

## Cycling series examples

The following examples show how series are cycled. For details, see “[Steps for cycling series](#)” on page 3-18.

### Example 1: A study of 10 series is displayed on one monitor

The number of times you need to [cycle forward](#) depends on the number of viewports used for cycling series.

For example, if there are four viewports on the screen and all of them are used for cycling series, you can view the entire study by cycling forward twice:

Workflow	Series placement
1. Initial series placement	Series 1 through 4 are displayed.
2. Cycle forward	Series 5 through 8 are displayed.
3. Cycle forward	Series 9 and 10 are displayed. Two viewports are empty.

### Example 2: One viewport is not used for cycling series

When a viewport is not used for cycling series, the series placement is affected.

Compared to Example 1, if the first viewport is not used for cycling series, different series are displayed when you [cycle forward](#):

Workflow	Series placement
1. Initial series placement	Series 1 through 4 are displayed.
2. Cycle forward	Series 1, and 5 through 7 are displayed.
3. Cycle forward	Series 1, and 8 through 10 are displayed.

For situations in which a viewport is not used for cycling series, see “[Restrictions for cycling series](#)” on page 3-15.

## Pinning and unpinning a viewport

Pinning and unpinning a viewport enables you to specify whether the viewport is used for cycling [series](#). For details, see “[About cycling series](#)” on page 3-15.

---

**Note:** Whether empty viewports are used for cycling series is defined in the [display protocol](#) currently applied to the study. For details on display protocols, see “[About display protocols](#)” on page 6-2.

---

## Pinning status of viewports

The following table describes the pinning status of viewports.

If...	Then...
A viewport is pinned	<p>The viewport is not used for cycling series. When you cycle series, the same series is displayed. For details, see “<a href="#">Example 2: One viewport is not used for cycling series</a>” on page 3-16.</p> <p>A common use for pinning is to pin viewports that hold posted scouts in CT/MR studies.</p>
A viewport is unpinned	The viewport is used for cycling series. When you cycle series, a different series is displayed.

## Restriction for unpinning a viewport

You cannot unpin a viewport when [multi-planar reconstruction \(MPR\)](#) images or all flagged images are displayed. For details, see “[Creating MPR images](#)” on page 2-32.

## Automatically pinning a viewport



A viewport is automatically pinned in one of the following situations:

- MPR images or all flagged images are displayed.
- The series is displayed by dragging the corresponding thumbnail into the viewport.

## Manually pinning or unpinning a viewport

To manually pin or unpin a viewport:

- Click the **Pin** icon at the top right corner of the viewport. The **Pin** icon indicates whether the viewport is currently pinned.

Icon	Meaning
	The viewport is currently pinned and is not used for cycling series.
	The viewport is currently unpinned and is used for cycling series.

## Steps for cycling series

For an overview of cycling series, see “[About cycling series](#)” on page 3-15.



### Steps for this task

To cycle series:

- 1 Specify which viewports are used for cycling series. See “[Pinning and unpinning a viewport](#)” on page 3-16.
- 2 Specify the studies for which you want to cycle series:

To...	Do this...
Cycle the series for one study	<ul style="list-style-type: none"> <li>Click an image from the study.</li> </ul>
Cycle the series for multiple studies	<ul style="list-style-type: none"> <li>Hold down the CTRL key, and click an image from each study.</li> </ul>

- 3 Cycle series as follows:

To...	Do this...
Cycle forward	<ul style="list-style-type: none"> <li>Click the <b>Cycle Next</b> icon on the Study toolbar.</li> </ul> 
Cycle backward	<ul style="list-style-type: none"> <li>Click the <b>Cycle Previous</b> icon on the Study toolbar.</li> </ul> 

The next or previous set of series are displayed in the viewports that are used for cycling series.

## Re-ordering series

You can change the sequence of the [series](#) in the study. McKesson Radiology™ Disc regenerates the series numbers based on the new sequence.

### Steps for this task

To re-order series:

- Drag the thumbnail to the new location on the Thumbnail toolbar. For details on the Thumbnail toolbar, see “[Using the Thumbnail toolbar](#)” on page A-12.

## Setting screen and viewport layout

This section describes how to set screen and viewport layout.

### In this section

This section contains the following topics:

Topic	See page
Setting the screen layout	3-19
Setting the viewport layout	3-20

## Setting the screen layout

The screen layout specifies how many viewports to display on a screen. For an overview of the viewports, see “[Understanding viewports](#)” on page A-18.

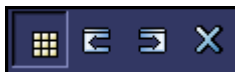
You can set the screen layout in one of the following ways:

- Select a predefined screen layout that is commonly used for the [modality](#) of the study
- Manually specify the screen layout

### Steps for this task

To set the screen layout:

- 1 Click the **Screen Layout** icon on the Study toolbar.



- 2 From the menu that is displayed, select the option of your choice:

To...	Do this...
Select a predefined screen layout	<ul style="list-style-type: none"> <li>• Select the screen layout of your choice. For example, if you select the <b>Vertical Split (1x2)</b> layout, the screen will contain 1 row and 2 columns (2 viewports in total).</li> </ul>
Specify the screen layout	<ul style="list-style-type: none"> <li>• Move the mouse pointer to specify the number of viewports to display, and then click.</li> </ul>

The screen layout is updated accordingly.

- Use your own [shortcut](#) to apply quick registration. To set up a shortcut, see “[Adding and modifying user shortcuts](#)” on page 8-10.

## Setting the viewport layout

The viewport layout specifies how many images to display in a viewports at a time. For an overview of the viewports, see “[Understanding viewports](#)” on page A-18.

You can set the viewport layout in one of the following ways:

- Select a predefined viewport layout that is commonly used for the **modality** of the study
- Manually specify the viewport layout

### Steps for this task

To set the viewport layout:

- 1 Click the **Layout** icon at the top of the viewport.



—or—

Right-click an image and point to **Layout**, and then select **Viewport**.

---

**Note:** Whether the **Layout** option is displayed on the right-click menu depends on your right-click preferences. See “[Main toolbar preferences](#)” on page 8-2.

---

- 2 From the menu that is displayed, select the option of your choice:

To...	Do this...
Select a predefined viewport layout	<ul style="list-style-type: none"><li>• Select the viewport layout of your choice. For example, if you select the <b>Horizontal Split (2x1)</b> layout, your viewport will contain 2 rows and 1 column (2 images in total).</li></ul>
Specify the viewport layout	<ul style="list-style-type: none"><li>• Move the mouse pointer to specify the number of images to display, and then click.</li></ul>

The viewport layout is updated accordingly.

- Use your own **shortcut** to apply quick registration. To set up a shortcut, see “[Adding and modifying user shortcuts](#)” on page 8-10.



## Working with linked series

This section describes how to work with linked series.

### In this section

This section contains the following topics:

Topic	See page
Linking and unlinking series	3-21
Applying registration to series	3-22
Applying an offset to a series	3-25
Removing offsets and registrations	3-25
Scrolling other linked series to a defined point	3-26

## Linking and unlinking series

Series containing cross-sectional images can be linked. As a result, the spatial position of the current image is reflected in the other linked series. Linking series enables you to scroll through multiple series simultaneously. For details, see “Scrolling through a series” on page 3-12.



The linking status for each viewports is defined in the display protocols currently applied to the study. For details on display protocols, see “About display protocols” on page 6-2. You can also manually specify the linking status as follows:

- Link and unlink individual viewports
- Link and unlink all viewports

### Linking or unlinking individual viewports

To link or unlink individual viewports:

- Click the **Link** icon at the top of each viewport you want to link or unlink. The **Link** icon indicates whether the series is currently linked.

Icon	Meaning
	The viewport is currently unlinked.
	The viewport is currently linked.

—or—

Do one of the following:

- Click the arrow beside the **Link** icon, and then select **Link** or **Unlink**.
- Right-click the viewport and point to **Link**, and then select **Link** or **Unlink**.

---

**Note:** Whether the **Link** option is displayed on the right-click menu depends on your right-click preferences. See “[Main toolbar preferences](#)” on page 8-2.

---

- Use your own [shortcuts](#) to link or unlink the viewport. To set up shortcuts, see “[Adding and modifying user shortcuts](#)” on page 8-10.

## Linking and unlinking all viewports

To link or unlink all viewports:

- 1 Click the arrow beside the **Link** icon at the top of a viewport.



- 2 From the menu that is displayed, select the option of your choice:

To...	Do this...
Link all viewports	<ul style="list-style-type: none"> <li>• Select <b>Link All</b>.</li> </ul>
Unlink all viewports	<ul style="list-style-type: none"> <li>• Select <b>Unlink All</b>.</li> </ul>

## Applying registration to series

When [series](#) are in different [frames of reference](#), scrolling a series does not display the same anatomical region in other linked series.

Apply registration to the series to adjust the link alignment, so that they share the common frame of reference. Registration is applied by identifying the anatomical reference points for the series you want to align. The anatomical reference points are called registration points.

---

**Note:** You can also align images within a series. For details, see “[Applying an offset to a series](#)” on page 3-25.

---

## Available registration types

The following table describes the two types of registrations.

Registration type	Meaning
Quick registration	The center of each displayed image is used as a registration point.
Precise registration	Two or more registration points are identified manually. Any location on the displayed images can be used as a registration point.

## Applying quick registration

To apply quick registration:

- 1 Link all series to which you want to apply quick registration. See “[Linking and unlinking series](#)” on page 3-21.
- 2 For each linked series, scroll to the image whose center you want to use as a registration point.
- 3 Click the arrow beside the **Link** icon at the top of a linked viewport.



- 4 From the menu that is displayed, select **Quick Registration**.

Quick registration is applied to the series. Scrolling a series displays the corresponding images in the linked series.

## Applying precise registration

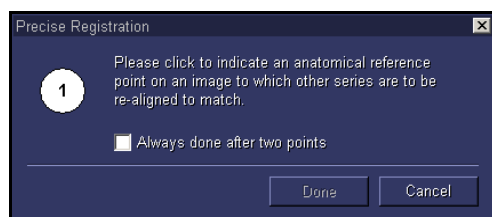
To apply precise registration:

- 1 Display the images to which you want to assign the registration points.
- 2 Click the arrow beside the **Link** icon at the top of a viewport.
- 3 From the menu that is displayed, point to **Advanced Reg./Offset**, and then select **Precise Registration**.



The **Precise Registration** dialog box is displayed.

Figure 3-5 Precise Registration dialog box



- 4 Specify whether you want to use two or more registration points:

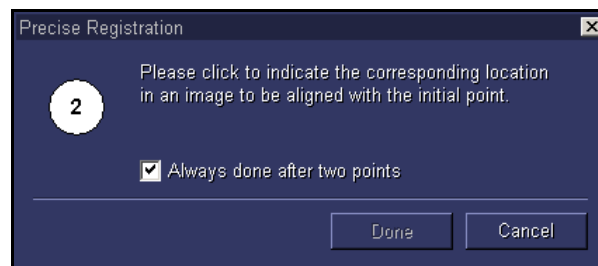
To...	Do this...
Use two registration points	<ul style="list-style-type: none"> <li>• Select the <b>Always done after two points</b> check box.</li> </ul>
Use more than two registration points	<ul style="list-style-type: none"> <li>• Clear the check box.</li> </ul>

- 5 Click the image where you want to use as the first registration point.

The first registration point is indicated on the image.

*Figure 3-6 First registration point is identified*

In addition, the **Precise Registration** dialog box is displayed, asking you to identify the second registration point.

*Figure 3-7 Precise Registration dialog box (after the first registration point is identified)*

- 6 Click the image you want to use as the second registration point. The second registration point must be in a different frame of reference.

The second registration point is now indicated on the image.

*Figure 3-8 Second registration point is identified*

- 7 If in step 4, you have specified to use more than two registration points, repeat step 6, until all the registration points are identified.
- 8 Click **Done**.

Precise registration is applied to the series. Scrolling a series displays the corresponding images in the linked series.

## Applying an offset to a series

An offset is a correction made to a **frame of reference**. You can apply an offset, to align images.

### Available offset types

The following table describes the two types of offsets.

Offset type	Meaning
Spatial offset	Apply a correction based on spatial relationship. For example, spatial offset is useful when the patient left the <b>image device</b> temporarily during the scan.
Frame count offset	Apply a correction based on the number of frames. For example, frame count offset is useful for simultaneous viewing of bilaterally similar anatomy when the patient was not leveled during the scan.

### Steps for this task

To apply an offset:

- 1 Unlink the series. See **“Linking and unlinking series”** on page 3-21.
- 2 Display the image to which you want to apply an offset.
- 3 Click the arrow beside the **Link** icon at the top of the viewport.



- 4 From the menu that is displayed, point to **Advanced Reg./Offset**, and then specify the type of offset to apply. For details, see **“Available offset types”** on page 3-25.

To...	Do this...
Apply a spatial offset	<ul style="list-style-type: none"> <li>• Select <b>Offset by Spatial</b>.</li> </ul>
Apply a frame count offset	<ul style="list-style-type: none"> <li>• Select <b>Offset by Frame Count</b>.</li> </ul>

The corresponding offset is applied and the series is re-linked to the other series.

## Removing offsets and registrations

If you are not satisfied with the applied **offsets** and/or **registrations**, you can remove them from the series or studies. For details on offsets and registrations, see **“Applying an offset to a series”** on page 3-25 and **“Applying registration to series”** on page 3-22.

## Restriction for removing offsets and registrations

Only manually applied offsets and registrations can be removed. When an offset or registration is removed, the original **frame of reference** and/or link alignment of the series or study is restored.

## Removing the offset or registration from a series

To remove the offset or registration from a series:

- 1 At the top of the viewport that holds the series for which you want to reset the adjustment, click the arrow beside the **Link** icon.



- 2 From the menu that is displayed, point to **Advanced Reg./Offset**, and then specify what to remove from the series:

To...	Do this...
Remove the offset	• Click <b>Remove Offset</b> .
Remove the registration	• Click <b>Remove Active Series Registration</b> .

The offset or registration is removed accordingly.

## Removing all registrations from the study

To remove all registrations from the study:

- 1 Click the arrow beside the **Link** icon at the top of a viewport.



- 2 From the menu that is displayed, point to **Advanced Reg./Offset**, and then click **Remove All Registration**.

All registrations are removed from the study.

## Removing all offsets and registrations from the study

To remove all offsets and registrations from the study:

- 1 Click the arrow beside the **Link** icon at the top of a viewport.



- 2 Click **Reset all**.

All offsets and registrations are removed from the study.

## Scrolling other linked series to a defined point

If a **series** shares a spatial relationship with another series, you can see where it bisects the linked series. You can:

- Display the corresponding anatomical point in the linked series
- Interactively display the anatomical point in the linked series

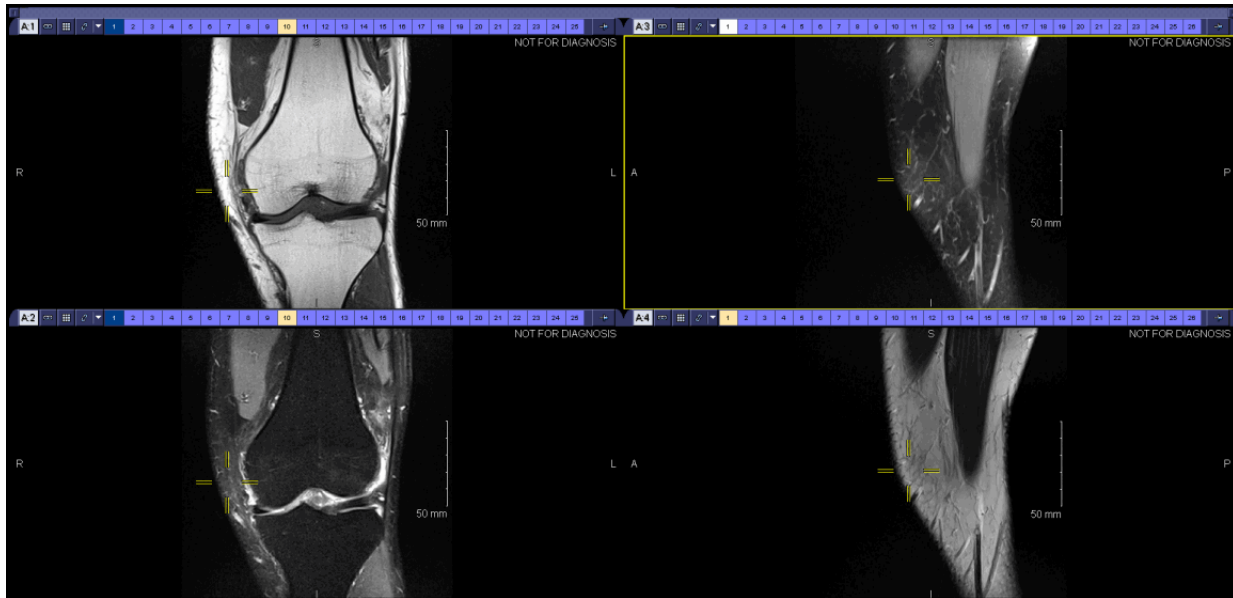
### Displaying a point in the linked series

To display a point in the linked series:

- Double-click on the image where you want to locate in the linked series.

The location and its closest anatomical point in the linked series are indicated.

*Figure 3-9 Scroll to Point indicator is displayed on images*



### Interactively display a point in the linked series

You can use your own **shortcut** to interactively display a point in the linked series. To set up a shortcut, see **“Adding and modifying user shortcuts”** on page 8-10.





## Chapter 4 - Working with cine clips

This section describes how to view cine clips.

### In this section

This section contains the following topics:

Topic	See page
<a href="#">About cine clips</a>	<a href="#">4-2</a>
<a href="#">Viewing cine clips</a>	<a href="#">4-4</a>

## About cine clips

A cine clip is a time-based image that contains a sequence of frames. Typically, cine clips are used in **Ultrasound (US)**, Radio Fluoroscopy (RF), and **X-Ray Angiography (XA)** studies.

### Indication of a cine clip

A cine clip is indicated by the thumbnail representing the **series**. For details, see “**Thumbnail appearance**” on page A-15.

Figure 4-1 The series is a cine clip

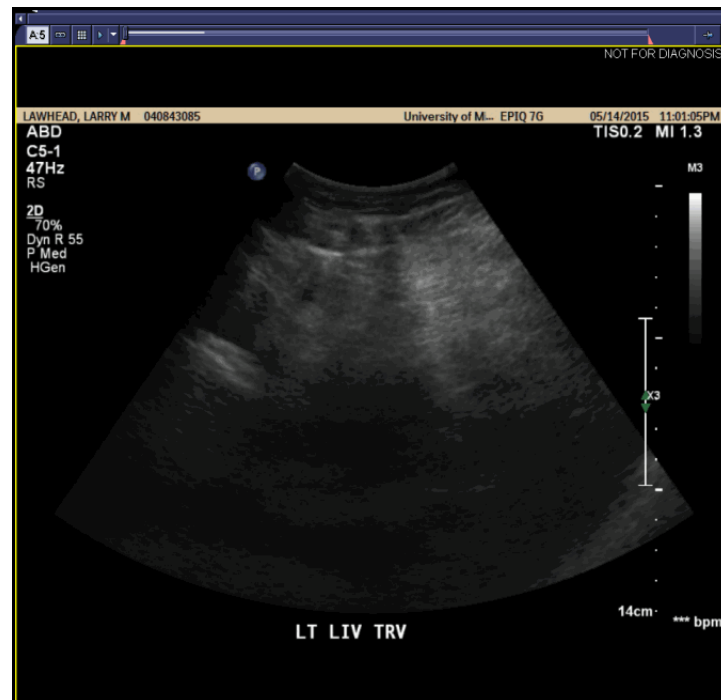


### Available cine clips display modes

Cine clips have two display modes. The following table describes the available cine clips display modes.

Cine clips display mode	Meaning
Cine	<p>The cine clip is displayed as a sequence of frames.</p> <p>The chits at the top of the viewport are replaced by the Cine Playback control. See <i>Figure 4-2</i> on page 4-3.</p> <p>For details, see “<b>Viewing cine clips</b>” on page 4-4.</p>
Standard	<p>The cine clip is displayed as a <b>series</b> of still images.</p> <p>Displaying a cine clip in Standard mode enables you to manipulate a frame as if you would an image. For details, see “<b>Working with images</b>” on page 2-1.</p>

Figure 4-2 Viewport with Cine Playback control



### Steps for this task

To switch between the Cine mode and Standard mode:

- 1 Click the **Display Mode** icon at the top of the viewport.



- 2 From the menu that is displayed, select the cine clips display mode of your choice:
  - **Standard Mode**
  - **Cine Mode**

## Viewing cine clips

This section describes how to view cine clips.

### In this section

This section contains the following topics:

Topic	See page
Playing cine clips	4-4
Pausing cine clips	4-5
Selecting the playback mode	4-6
Selecting the playback speed	4-7
Rewinding or fast forwarding a cine clip	4-8
Stepping through a cine clip	4-8
Playing a part of a cine clip	4-8

## Playing cine clips

You can play an individual **cine clip**, or all cine clips displayed in the viewports.

**Note:** If the **series** is linked to and shares a spatial relationship with another series, the linked series scrolls simultaneously. For details on series linking, see “**Working with linked series**” on page 3-21.

### Restriction for playing cine clips

To reduce flickering when playing a cine clip, each frame is displayed using the presentation settings (**Window/Level**, **Zoom/Pan**) of the first frame.

### Steps for this task

To play an individual cine clip:

- Click the **Play** icon on the Cine Playback control.



-or-

- Click the arrow beside the **Play** icon, and then select **Play**.

The slider on the Cine Playback control moves from left to right, indicating the progress of the cine playback.

## Playing all cine clips

You can set up your own shortcut to play all cine clips that are displayed in the viewports. For details, see [“Adding and modifying user shortcuts”](#) on page 8-10.

## Pausing cine clips

Cine clips can be paused automatically or manually. You can manually pause an individual cine clip, or all cine clips that are playing.

### Automatically pausing cine clips

During playback, a cine clip is automatically paused when you do one of the following:

- Click or right-click a frame
- Use the mouse to change the [Window/Level](#) of a frame
- Use the mouse to zoom and/or pan a frame
- Scroll within the viewport by rotating the mouse wheel

### Steps for this task

To pause an individual cine clip:

- Click the **Pause** icon on the Cine Playback control.



Or, do one of the following:

- Click the arrow beside the **Pause** icon, and then select **Pause**.

The cine playback is paused, and the slider on the Cine Playback control indicates where the displayed frame is located in the cine clip.

### Pausing all cine clips

You can set up your own shortcut to pause all cine clips. For details, see [“Adding and modifying user shortcuts”](#) on page 8-10.

## Selecting the playback mode

The playback mode defines how a **cine clip** is played.

### Available playback modes

The following table describes the available playback modes.

Playback mode	Meaning
Loop Repeatedly	Play the cine clip continuously in a loop, until you manually stop or pause the cine clip.
Once Through	Play the cine clip once from beginning to end.
Wave	Play the cine clip from beginning to end, then reverse and play the clip from end to beginning.

### Steps for this task

To select the playback mode of a cine clip:

- Click the arrow beside the **Play** or **Pause** icon on the Cine Playback control, and then select the playback mode. The check mark indicates the currently selected option. For details, see “[Available playback modes](#)” on page 4-6.

## Selecting the playback speed

The playback speed defines how fast a **cine clip** is played.

### Available playback speed options

The following table describes the available playback speed options.

Playback speed option	Meaning
Full Speed	Play the cine clip at its acquisition frame rate.
Half Speed	Play the cine clip at half of its acquisition frame rate.
Quarter Speed	Play the cine clip at a quarter of its acquisition frame rate.

The acquisition frame rate is stored in the **DICOM header**. If it is not specified, the full speed depends on the site configuration. For details, contact McKesson Support.

### Steps for this task

To select the playback speed of a cine clip:

- Click the arrow beside the **Play** or **Pause** icon on the Cine Playback control, and then select the playback speed. The check mark indicates the currently selected option. For details, see “[Available playback speed options](#)” on page 4-7.

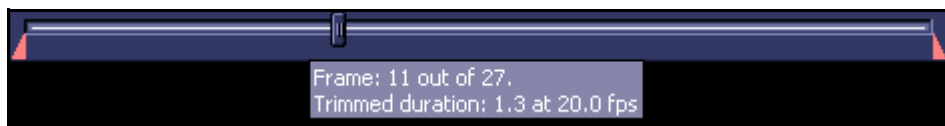
## Rewinding or fast forwarding a cine clip

You can rewind or forward a **cine clip** while it is playing or paused. If the cine clip is paused, you can also step through the cine clip. For details, see “Stepping through a cine clip” on page 4-8.

### Steps for this task

To rewind or fast forward while a cine clip is playing:

- 1 Drag the slider on the Cine Playback control to where you want to start playing the cine clip.



- 2 If the cine clip is paused, resume the cine playback. To do so, click the **Play** icon on the Cine Playback control.



## Stepping through a cine clip

When a **cine clip** is paused, the slider on the Cine Playback control indicates where the displayed frame is located in the cine clip. You can step through it.

### Steps for this task

To step through a cine clip:

- Slowly drag the slider forward or backward.

## Playing a part of a cine clip

Sometimes you may want to play only the part of a **cine clip** that is diagnostically relevant, for example the first half or the middle part. In this case, you can set the range in which you want to play the cine clip.

### Steps for this task

To play a part of a cine clip:

- 1 Set the start range of the cine playback. To do so, drag the left frame marker on the Cine Playback control to where you want to start the playback.





- 2 Set the end range of the cine playback. To do so, drag the right frame marker to where you want to end the playback.



- 3 If the cine clip is paused, resume the cine playback. To do so, click the **Play** icon on the Cine Playback control.



The slider moves between the frame markers only, indicating that the cine clip is playing within the range that you have specified.



## Chapter 5 - Viewing patient information and documents

This section describes how to access patient information and documentation using the Patient Portfolio.

### In this section

This section contains the following topics:

Topic	See page
About the Patient Portfolio	5-2
Viewing patient and study information	5-6
Viewing patient documentation	5-10

## About the Patient Portfolio

This section provides an overview of the Patient Portfolio.

### In this section

This section contains the following topics:

Topic	See page
<a href="#">Purpose of the Patient Portfolio</a>	<a href="#">5-2</a>
<a href="#">Patient Portfolio work area</a>	<a href="#">5-2</a>
<a href="#">Displaying the Patient Portfolio</a>	<a href="#">5-5</a>

## Purpose of the Patient Portfolio

The Patient Portfolio enables you to access patient and study information, and the documentation associated with patient studies. You can view the following patient documentation:

- [Patient reports](#)
- [Voice clips](#)

## Patient Portfolio work area

This section identifies the components of the Patient Portfolio work area.

### In this section

This section contains the following topics:

Topic	See page
<a href="#">Overview of the Patient Portfolio</a>	<a href="#">5-2</a>
<a href="#">Patient Portfolio sidebar</a>	<a href="#">5-4</a>
<a href="#">Patient Portfolio display area</a>	<a href="#">5-4</a>

## Overview of the Patient Portfolio

The Patient Portfolio displays information about the patient whose study is currently open. In addition, it lists the patient documentation associated with the patient.

Figure 5-1 Patient Portfolio work area

Study Information	
Name:	DiskImport5, Ct1026
DOB:	Unknown
ID:	5CT1026
Study Date:	13-Feb-1998 03:20
Study Priority	Routine
Study Status	Performed
Gender	Unknown
Pregnancy Status	Unknown
Age (at the time of study)	Unknown
Patient Class	Unknown
Body Region	Unknown
Reported By	N/A
Reported On	N/A
Accession Number	555CT1026
Study ID	344

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## Components of the Patient Portfolio work area

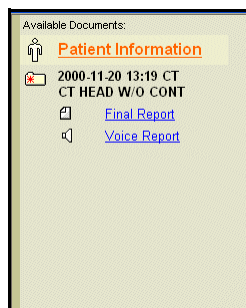
The following table describes the Patient Portfolio work area components. See *Figure 5-1* on page 5-3.

Component	Meaning
1. Patient Portfolio sidebar	Lists the Patient Information folder, study information folder, reports, and voice clips for the patient whose study is open or selected.
2. Document display area	Displays information about the selected patient or a patient document.

## Patient Portfolio sidebar


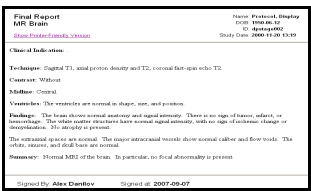
The Patient Portfolio sidebar consists of folders. Each folder provides access to patient information, study information, or patient documentation. The information and documentation available for each study are listed in the Patient Portfolio sidebar folders. See “[Patient Portfolio sidebar folders](#)” on page 5-4.

Figure 5-2 Portfolio sidebar



## Patient Portfolio sidebar folders

The following table describes the Patient Portfolio sidebar folders.

Folder	Description
<b>Patient Information folder</b>  <b>Patient Information</b>	Displays all available patient information, for example the patient's name, date of birth, and patient ID. See “ <a href="#">Viewing patient information</a> ” on page 5-6.
<b>Study Information folder</b> 	<p>Displays the Study Information, including treatment, location, physician, and identification and tracking details. See “<a href="#">Viewing study information</a>” on page 5-8.</p> <p>Contains a list of <a href="#">reports</a> and <a href="#">voice clips</a>. The type of documentation available is identified by an icon and link. For details, see “<a href="#">Viewing patient documentation</a>” on page 5-10.</p>

## Patient Portfolio display area

The Patient Portfolio display area displays the following information about the patient whose study is currently open:

- Patient information. See “[Viewing patient information](#)” on page 5-6.
- Study information. See “[Viewing study information](#)” on page 5-8.
- Preliminary and final reports. See “[Viewing and printing reports](#)” on page 5-10.
- Voice clips. For details, see “[Playing voice clips](#)” on page 5-13.

## Displaying the Patient Portfolio

The Patient Portfolio is displayed from any open study.

### Steps for this task

To display the Patient Portfolio from an open study:

- 1 Open the study whose patient documentation you want to view. See “[Opening studies](#)” on page 2-4.
- 2 Click the **View Documents** icon on the main toolbar.



The Patient Portfolio is displayed, listing the patient and study information, as well as the patient documentation associated with the patient. See [Figure 5-1](#) on page 5-3.

## Viewing patient and study information

This section describes how to view patient and study information in the Patient Portfolio.

### In this section

This section contains the following topics:

Topic	See page
<a href="#">Viewing patient information</a>	5-6
<a href="#">Viewing study information</a>	5-8

## Viewing patient information

The Patient Information page displays information about the patient associated with the open study.

### Steps for this task

To display patient information:

- 1 Display the Patient Portfolio. See [“Displaying the Patient Portfolio”](#) on page 5-5.
- 2 In the [Portfolio sidebar](#), click the Patient Information folder.



The patient information is displayed in the [Portfolio display area](#) (see [Figure 5-1](#) on page 5-3). See [“Patient information displayed”](#) on page 5-6.

### Patient information displayed

The following table describes the information that can be viewed.

Information	Description
Treatment related details	Message describing unresolved QA issues, Contrast Allergies, <a href="#">Medical Alerts</a> , Pregnancy Status



Information	Description (Continued)
Patient details	<p>Age, Gender, <b>Ethnic Origin</b></p> <hr/> <p><b>Note:</b> Patient age is calculated based on the age of the patient when the <b>anchor study</b> was performed. If the age obtained is less than or equal to 30 days, a D suffix is used. If the age is less than or equal to 23 months, an M suffix is used. If the age is more than 23 months, a Y suffix is used. For example, 20 D would denote an age of 20 days. 14 M would denote an age of 14 months, and 27 Y would denote an age of 27 years.</p> <hr/>
Tracking and identification information	<p>Alternate <b>Patient IDs</b>, patient custom fields</p> <hr/> <p><b>Note:</b> Depending on the configuration at your site, these fields may not be displayed.</p> <hr/>

**Note:** Additional patient information may be displayed depending on the configuration at your site.



## Viewing study information

The Study Information page displays information about the selected study. See [Figure 5-3](#) on page 5-8.

### Steps for this task

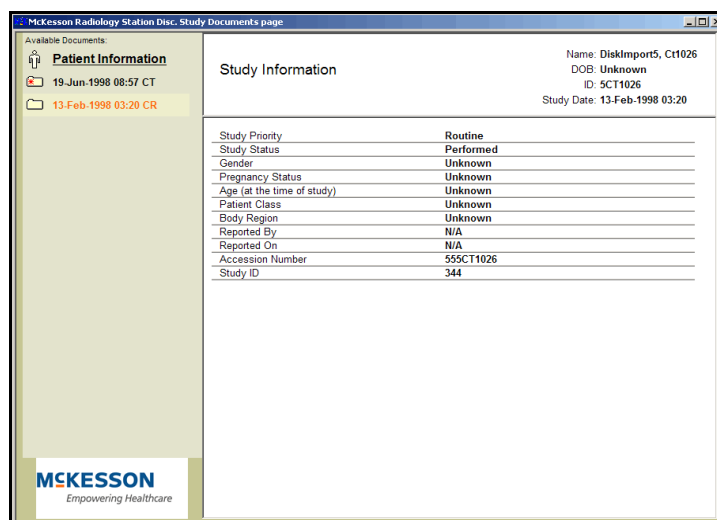
To display study information:

- 1 Display the Patient Portfolio. See [“Displaying the Patient Portfolio”](#) on page 5-5.
- 2 In the [Portfolio sidebar](#), click the **Study Information** folder for the study whose information you want to view.

Folder icon	Description
	Display study information for the open study.
	Display study information for other studies belonging to the same patient.

The study information is displayed in the [Portfolio display area](#). See [“Study information displayed”](#) on page 5-8.

Figure 5-3 Study Information page displaying study information



The screenshot shows the McKesson Radiology Station Disc Study Documents page. On the left is a sidebar with 'Available Documents' including 'Patient Information', '19-Jun-1998 08:57 CT', and '13-Feb-1998 03:20 CR'. The main area is titled 'Study Information' and contains a table of patient and study details.

Study Information	
Name:	DiskImport5, Crt1026
DOB:	Unknown
ID:	5CT1026
Study Date:	13-Feb-1998 03:20
Study Priority	Routine
Study Status	Performed
Gender	Unknown
Pregnancy Status	Unknown
Age (at the time of study)	Unknown
Patient Class	Unknown
Body Region	Unknown
Reported By	N/A
Reported On	N/A
Accession Number	555CT1026
Study ID	344

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### Study information displayed

The following table describes the information that can be viewed.

Information	Description
Treatment related details	<a href="#">Indications</a> , <a href="#">Diagnosis</a> , message describing QA issues, Contrast Allergies, <a href="#">Medical Alerts</a> , Pregnancy Status

Information	Description (Continued)
Location details	Patient Location, Patient Class, Device Location, Body region
Study details	Study ID
Associated physicians	Radiologist the study is assigned to, Radiologist who marks study as Reported, Requesting Physician, Referring Physician, and Technologist who captured the images
Patient details	Age, Gender, Ethnic Origin
Tracking and identification information	Alternate Patient IDs, Admission ID, Placer Order Number, Filler Order Number, Requested Procedure ID, Accession Number  <b>Note:</b> Depending on the configuration at your site, these fields may not be displayed.

**Note:** Additional study information may be displayed depending on the configuration at your site.

## Viewing patient documentation

This section describes how to access and view **patient reports** and **voice clips**.

### In this section

This section contains the following topics:

Topic	See page
Viewing and printing reports	5-10
Playing voice clips	5-13

## Viewing and printing reports

The Patient Portfolio enables you to view final and preliminary **reports**. You can view and print a report.

### Display formats for reports

A report is displayed in either HTML or Portable Document Format (PDF). The display format is determined by the original format of the report when it was created.

The following table describes the display format for reports.

Original format	Format displayed
ASCII or RTF	HTML format, in the Web browser
PDF	Viewed in PDF format, in Adobe Reader®  <b>Note:</b> The Adobe Reader® can be downloaded from the web site at: <a href="http://www.adobe.com">www.adobe.com</a>

### How are reports created



Reports are created in any of the following ways:

- In **McKesson Radiology Station™** using any of the following tools:
  - McKesson Radiology Report™ composition tool. Reports created using McKesson Radiology Report™ are saved in Rich Text Format (RTF). For details, refer to the *McKesson Radiology Report™ User's Guide*.
- Through a third-party **radiology information system (RIS)** or other reporting system used at your site. Reports received from a third-party system are saved in **ASCII** format.

## Viewing a report

To view a report:

- 1 Display the Patient Portfolio. For details, see “[Displaying the Patient Portfolio](#)” on page 5-5.
- 2 In the Portfolio sidebar, click the report icon next to the report you want to view.

Icon	Meaning
	Final report. A report that cannot be modified or resaved.
	Preliminary report. A report that may still require modification after further review.  <b>Note:</b> Reports cannot be modified in the Advanced Viewer.

The report is displayed in one of the following formats:

- HTML in the [Portfolio display area](#). See [Figure 5-4](#).
- PDF in Adobe Reader®. See [Figure 5-5](#).

*Figure 5-4 Report displayed in HTML format in the Portfolio display area*

<b>Final Report</b> <b>MR Brain</b> <a href="#">Show Printer-Friendly Version</a>	Name: Protocol, Display DOB: 1950-06-12 ID: dpstage002 Study Date: 2000-11-20 13:19
<p><b>Clinical Indication:</b> .</p> <p><b>Technique:</b> Sagittal T1, axial proton density and T2, coronal fast-spin echo T2.</p> <p><b>Contrast:</b> Without.</p> <p><b>Midline:</b> Central.</p> <p><b>Ventricles:</b> The ventricles are normal in shape, size, and position.</p> <p><b>Findings:</b> The brain shows normal anatomy and signal intensity. There is no sign of tumor, infarct, or hemorrhage. The white matter structures have normal signal intensity, with no sign of ischemic change or demyelination. No atrophy is present.</p> <p>The extraaxial spaces are normal. The major intracranial vessels show normal caliber and flow voids. The orbits, sinuses, and skull base are normal.</p> <p><b>Summary:</b> Normal MRI of the brain. In particular, no focal abnormality is present.</p>	
Signed By: <b>Alex Danilov</b> Signed at: <b>2007-09-07</b>	

Figure 5-5 Report displayed in PDF

Adobe Acrobat - [svvPAES[1].pdf]

File Edit Document Tools View Window Help

195%

Ultrasound

Name

ID  DOB  Age  yr Study Date

**History:**

Indication:

Comment:

**SONOGRAPHIC FINDINGS**

Scan Quality:

Liver:

Gallbladder:

Intrahepatic Ducts:

Common Bile Duct:

Pancreas:

Spleen:

Right Kidney:

Left Kidney:

IVC:

Aorta:

Lymph Nodes:

Collections:

Procedure:

Doppler:

Size:

Length  cm Width  cm Depth  cm Volume:  cc

## Printing a report

To print a report:

- 1 Display the report you want to print. Follow steps 1-2 of “Viewing and printing reports” on page 5-10.
- 2 In the Document Display area, under the report heading, click **Show Printer-Friendly Version**.  
A print preview of the report is displayed along with the **Print** dialog box.
- 3 Select the printer to which you want to print, and then click **Print**.

**Note:** When you print a PDF report from Adobe Reader®, the report headers are not included.

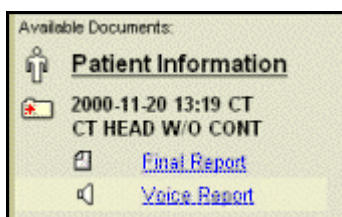
## Playing voice clips

Voice clips are stored as WAV files. To play voice clips, a media player needs to be installed on the workstation. For details on the supported media players, refer to the *McKesson Radiology™ Applications Requirements Guide* or contact your system administrator.

### Steps for this task

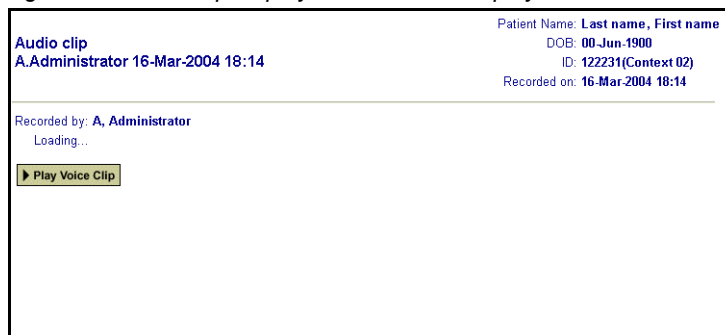
To play a voice clip:

- 1 Display the Patient Portfolio. For details, see “[Displaying the Patient Portfolio](#)” on page 5-5.
- 2 In the [Portfolio sidebar](#), click the link to the voice clip you want to play.

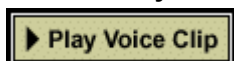


The voice clip and associated information are displayed in the [Portfolio display area](#).

Figure 5-6 Voice clip displayed in Portfolio display area



- 3 Click the **Play Voice Clip** button.



The voice clip is played in the appropriate media player.

- 4 To close the voice clip, close the media player.





## Chapter 6 - Working with display protocols

This section describes how to use display protocols.

### In this section

This section contains the following topics:

Topic	See page
About display protocols	6-2
Applying a display protocol	6-4
Working with display protocol stages	6-8

## About display protocols

This section describes display protocols.

### What is a display protocol

A display protocol is a digital equivalent of a hanging protocol. It contains an ordered collection of display protocol stages through which the user can navigate to view the [anchor study](#) and any [reference studies](#) in a useful and organized fashion. Display protocols enable [Radiologists](#) to view images efficiently.

Display protocol stages can be interpreted as display protocols within display protocols. They define the image display area, by specifying which stages are displayed and how they are displayed. For details, see [“Understanding display protocol stages”](#) on page 6-8.

### Attributes of a display protocol

The attributes of a display protocol are specified when the display protocol is created in McKesson Radiology Station™. Display protocols cannot be created in the Advanced Viewer.

Each display protocol contains the following attributes:

Attributes	Details
General Properties	<p>The General properties include:</p> <ul style="list-style-type: none"> <li>Name and author of the display protocol</li> <li>Anchor Applicability Rules, which are the filter criteria that determine whether the display protocol is relevant to an open study (For details, see <a href="#">“What is a relevant display protocol”</a> on page 6-5.)</li> <li>Viewport layout and appearance options</li> </ul> <hr/> <p><b>Note:</b> Once a display protocol is created, the ownership level, and viewport layout and appearance options cannot be modified.</p>
Reference Studies properties	<p>The Reference Studies properties, also known as the Reference Relevancy Rules, include:</p> <ul style="list-style-type: none"> <li>Filter criteria that identify studies relevant for interpreting the <a href="#">anchor study</a></li> <li>Whether to open the relevant studies automatically</li> <li>Options that specify which relevant studies to open</li> </ul>

Attributes	Details (Continued)
Layout and presentation settings of each display protocol stage	<p>The layout includes:</p> <ul style="list-style-type: none"><li>• Number of viewports on each screen</li><li>• Layout of images in each viewport</li><li>• <b>Series</b> placement in each viewport</li></ul> <p>The presentation settings include:</p> <ul style="list-style-type: none"><li>• <b>Window/Level</b> for each viewport</li><li>• Zoom/Pan settings for each viewport</li><li>• Image orientation (rotation and flip) for each viewport</li><li>• Series display mode for each viewport</li><li>• Linking status for each viewport</li></ul> <p>For details, see “<b>Attributes of a display protocol stage</b>” on page 6-8.</p>

## Applying a display protocol

This section describes how to apply a display protocol to an open study.

### In this section

This section contains the following topics:

Topic	See page
Overview of applying a display protocol	6-4
Automatically applying a display protocol	6-5
Manually applying a display protocol	6-7

## Overview of applying a display protocol

When a **display protocol** is applied to a study, Advanced Viewer performs the following tasks:

Task	Details
Identifies relevant studies	<p>Advanced Viewer uses the Reference Studies properties of the display protocol to identify studies relevant for interpreting the <b>anchor study</b>. If configured to do so, Advanced Viewer opens those studies as <b>reference studies</b>. Depending on the configuration, up to nine most recent relevant studies can be automatically opened.</p> <hr/> <p><b>Note:</b> Depending on the site configuration, grouped studies may be considered as relevant studies. In this case, they may also be automatically opened. For details, contact McKesson Support.</p> <hr/>
Displays images in the anchor study and reference studies	Advanced Viewer displays images in the anchor study and reference studies, according to the layout and presentation settings of the display protocol.

For details, see “**Attributes of a display protocol**” on page 6-2.

### Two ways to apply a display protocol

Display protocols can be applied automatically and manually. For details, see the following topics:

- “**Automatically applying a display protocol**” on page 6-5
- “**Manually applying a display protocol**” on page 6-7

## Automatically applying a display protocol

When you open a study, Advanced Viewer automatically determines a list of relevant **display protocols**, and applies the most appropriate one to the study. For details, see “Overview of applying a display protocol” on page 6-4.

### What is a relevant display protocol

Relevancy of display protocols is determined by the Anchor Applicability Rules, which are the following filter criteria:

- Modalities
- Body Regions
- Procedure Types

When you open a study, Advanced Viewer compares the study information with the filter criteria of all the display protocols that are available to you. A display protocol is relevant to a study when the study information matches all the filter criteria.

Filter criterion to match	Meaning
Modality	The <b>modality</b> of the study matches at least one of the modalities specified in the display protocol.
Body Regions	At least one of the <b>body regions</b> associated with the study matches at least one of the body regions specified in the display protocol.
Procedure Types	At least one of the <b>procedure types</b> associated with the study matches at least one of the procedure types specified in the display protocol.

The following table describes the conditions when a display protocol becomes relevant.

If...	Then...
A display protocol contains the CT modality as the filter criterion	The display protocol becomes relevant when you open a CT study.
A display protocol contains the Head body region as the filter criterion	The display protocol becomes relevant when you open a study associated with the Head body region.
A display protocol contains the Bone Density Spine procedure type as the filter criterion	The display protocol becomes relevant when you open a study associated with the Bone Density Spine procedure type.
A display protocol contains the CT modality and Head body region as the filter criteria	The display protocol becomes relevant when you open a CT study associated with the Head body region.

If the information is not available, the corresponding filter criterion is ignored. For example, if a study is not associated with any body region, Advanced Viewer checks the study information against the Modalities and Procedure Type filters criteria only.

The filter criteria are specified when the display protocol is created.

## Selecting the most appropriate display protocol

A study can have more than one relevant display protocol. The ranking determines which relevant display protocol is automatically applied when the study is opened. The default display protocol is the one that has the highest ranking. You can set a display protocol as the default when you create it in McKesson Radiology Station™.

**Note:** By default, the built-in Generic display protocol is applied. See “Applying the Generic display protocol” on page 6-6.

## Applying the Generic display protocol

The Generic display protocol is a built-in display protocol for studies of any **modality**. It provides a generic way to display studies. By default, it has the highest ranking and is automatically applied when a study is opened.

When the Generic display protocol is applied, Advanced Viewer performs the following tasks:

Task	Details
Identifies and opens relevant studies	<p>A study is considered relevant for interpreting the anchor study when:</p> <ul style="list-style-type: none"><li>• The study has at least one <b>body region</b> in common with the <b>anchor study</b>, and</li><li>• The study was performed within the last six months.</li></ul> <p>Up to two most recent relevant studies can be opened.</p>
Displays images using the most appropriate way	<p>Based on the <b>modality</b> of the studies, Advanced Viewer identifies the most appropriate way to display the images, and displays the images accordingly. This also includes creating <b>display protocol stages</b>. For details on display protocol stages, see “Understanding display protocol stages” on page 6-8.</p>

**Note:** The Generic display protocol cannot be modified or deleted.

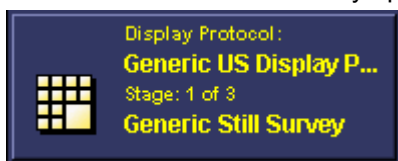
## Manually applying a display protocol

When you open a study, a **display protocol** is automatically applied to it. For details, see “**Automatically applying a display protocol**” on page 6-5. However, you can manually apply a different display protocol.

### Steps for this task

To manually apply a display protocol to the study:

- 1 Click the **Display Protocol** button at the top of the **work area**. The button displays information about the currently applied display protocol.



- 2 Apply the display protocol of your choice:

To...	Do this...
Apply a relevant display protocol, which matches the <b>modality</b> , <b>body region</b> , and <b>procedure type</b> of the study	<ul style="list-style-type: none"> <li>From the menu that is displayed, select the display protocol of your choice.</li> </ul> <p><b>Note:</b> The display protocols are listed according to their ranking.</p>
Apply a display protocol that matches only the modality of the study	<ul style="list-style-type: none"> <li>Point to <b>By Modality Only</b>, and select the display protocol.</li> </ul>
Apply a display protocol that matches only the modality and body region of the study	<ul style="list-style-type: none"> <li>Point to <b>By Modality and Body Regions</b>, and select the display protocol.</li> </ul>

The display protocol is applied. For details, see “**Overview of applying a display protocol**” on page 6-4.

## Working with display protocol stages

This section describes how to work with display protocol stages.

### In this section

This section contains the following topics:

Topic	See page
Understanding display protocol stages	6-8
Navigating the display protocol stages	6-10

## Understanding display protocol stages

Display protocol stages can be interpreted as **display protocols** within display protocols. They define the image display area by specifying which stages are displayed and how they are displayed. See “**Attributes of a display protocol stage**” on page 6-8.

Multiple stages may exist within a single display protocol, allowing you to view images in different contexts. See “**Types of display protocol stages**” on page 6-9.

### Attributes of a display protocol stage

The attributes of a display protocol stage are specified when the display protocol that contains the stage is created in McKesson Radiology Station™.

The following table describes the attributes of a display protocol stage.

Attributes	Example
Number of <b>viewport</b> on each screen	Display four viewports on each screen, using the Four Up (2x2) layout
Image layout in each viewport	Display one image at a time in each viewport, using the One Up (1x1) layout
<b>Series</b> placement in each viewport	Display the series as follows: <ul style="list-style-type: none"><li>• T1 series of the <b>anchor study</b>, in the top left viewport</li><li>• T2 series of the anchor study, in the top right viewport</li><li>• T1 series of the <b>reference study</b>, in the bottom left viewport</li><li>• T2 series of the reference study, in the bottom right viewport</li></ul>



Attributes	Example (Continued)
Presentation settings for images displayed in each viewport	Display the images in all viewports as follows: <ul style="list-style-type: none"> <li>• Zoom the images to fit the viewport</li> <li>• Display the images with their initial <b>Window/Level</b></li> <li>• Display the images in their initial orientation</li> <li>• Display the series in Standard mode</li> <li>• Link the viewport</li> </ul>

### Types of display protocol stages

The following table describes the four types of display protocol stages. Each display protocol stage type represents the context in which the stage is used.

Stage type	Meaning
Survey	Used for quickly viewing all the images in the <b>anchor study</b> .
Comparison	Used for viewing images in multiple studies.  Typically, this stage is for comparing images in the anchor study and its <b>reference studies</b> . It can be used for same <b>modality</b> comparison, or cross modality comparison.
Review	Used for reviewing flagged images in the anchor study, particularly as an aid for dictating <b>reports</b> .
Unviewed	Used for reviewing unviewed images as a set, particularly before an interpretation is completed  <hr/> <b>Note:</b> You cannot use MPR functionality or create MPR views when this display protocol stage is used.
Other	Used for any other purpose not covered by the other types.

The display protocol stage type is specified when the stage is added.

### Empty display protocol stages

Display protocol stages that do not display images are considered to be empty.

You can choose to skip or display empty display protocol stages when you navigate to them.





## Navigating the display protocol stages

You can navigate the **stages** of the currently applied **display protocol**, by:

- Moving through the stages
- Jumping to a particular stage

### Moving through the display protocol stages

To move through the stages:

To...	Do this...
Display the stage immediately preceding the currently displayed stage	<ul style="list-style-type: none"> <li>• Click the <b>Stage &lt;</b> icon on the main toolbar.</li> </ul>  <p>Or, do the following:</p> <ul style="list-style-type: none"> <li>- Click the <b>Display Protocol</b> button at the top of the <b>work area</b>. The button displays information about the applied display protocol and the current stage.</li> </ul>  <ul style="list-style-type: none"> <li>- From the menu that is displayed, select <b>Previous Stage</b>.</li> </ul>
Display the stage immediately after the currently displayed stage	<ul style="list-style-type: none"> <li>• Click the <b>Stage &gt;</b> icon on the main toolbar.</li> </ul>  <p>Or, do the following:</p> <ul style="list-style-type: none"> <li>- Click the <b>Display Protocol</b> button at the top of the <b>work area</b>. The button displays information about the applied display protocol and the current stage.</li> </ul>  <ul style="list-style-type: none"> <li>- From the menu that is displayed, select <b>Next Stage</b>.</li> </ul>

---

**Note:** You can also use your own **shortcuts** to move through the stages. To set up shortcuts, see “**Adding and modifying user shortcuts**” on page 8-10.

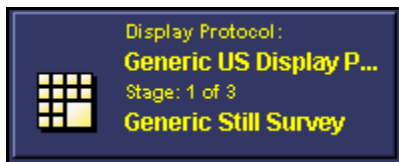
---

The corresponding stage is displayed.

## Jumping to a particular display protocol stage

To jump to particular stage:

- 1 Click the **Display Protocol** button at the top of the **work area**. The button displays information about the applied display protocol and the current stage.



- 2 Point to **View/Edit Stages**, and then select the stage that you want to display.  
The corresponding stage is displayed.



## Chapter 7 - Closing studies and exiting

This section describes how to close studies and exit the Advanced Viewer.

### In this section

This section contains the following topics:

Topic	See page
Closing studies	7-1
Exiting the Advanced Viewer	7-2


## Closing studies

This section describes how to close studies.

### Steps for this task

To close a study:

- In an open study, perform one of the following steps, depending on how many studies are included on the removable media or in the folder:

If the removable media or folder contains...	Then...
A single study	<ul style="list-style-type: none"> <li>Close the viewer. See “Exiting the Advanced Viewer” on page 7-2.</li> </ul>
One or more studies	<ol style="list-style-type: none"> <li>Click the <b>Study List</b> icon on the main toolbar.   <p>The Study List is displayed.</p> </li> <li>Click another study in the Study List.  <p>The currently open study is closed, and the other study is displayed.</p> </li> </ol>

**Note:** The Advanced Viewer enables you to view one study at a time. When you open another study, the study that was previously open is automatically closed.

## Exiting the Advanced Viewer

This section describes how to exit the Advanced Viewer.

### Steps for this task

To exit the Advanced Viewer:

- 1 Click the logged-on user name displayed on the top right corner of the Advanced Viewer application window.
- 2 Click **Quit**.

The Advanced Viewer is closed.

## Chapter 8 - Setting preferences

This section describes how to set preferences for using the Advanced Viewer.

---

**Caution:** Any changes you make to preferences or user shortcuts do not persist after you close the Advanced Viewer.

---

### In this section

This section contains the following topics:

Topic	See page
Main toolbar preferences	8-2
Power Scrolling preferences	8-5
Right-click menu preferences	8-7
User shortcuts	8-10

## Main toolbar preferences

Main toolbar preferences specify which icons are displayed. For details on the main toolbar, see [“About the main toolbar”](#) on page A-9.

### Default site settings

The default main toolbar contains the following icons, in the listed order:

- **Study List**
- **Display study details**
- **View Documents**
- **Help**
- **Annotate**
- **Window/Level**
- **Zoom**
- **Pan**
- **Flag**
- **Preferences**
- **Quit**

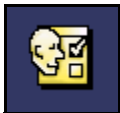
### Customizing the main toolbar

You can customize the main toolbar preferences, in the following ways:

- Add or remove icons
- Rearrange the order of the icons
- Show or hide the icon labels
- Hide the toolbar and change its placement
- Reset the preferences to the default site settings

To set the main toolbar preferences:

- 1 Click the **Preferences** icon on the main toolbar.



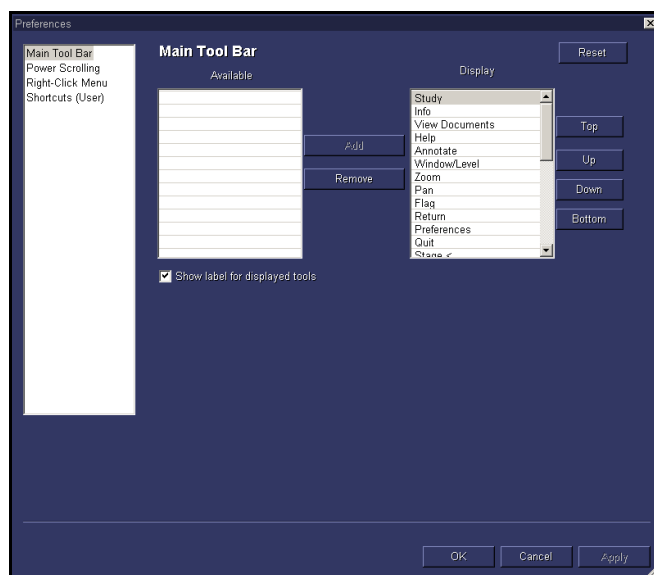
The **Preferences** dialog box is displayed.

- 2 Click **Main Tool Bar** in the left pane.

The **Main Tool Bar Menu** preferences are listed on the right. The **Display** list shows the current main toolbar preferences.



Figure 8-1 Main Tool Bar preferences



## 3 To add or remove icons:

To...	Do this...
Add icons	<ul style="list-style-type: none"> <li>From the <b>Available</b> list, select the icons, and then click <b>Add</b>.</li> </ul> <p>The icons are moved to the bottom of the <b>Display</b> list.</p>
Remove icons	<ul style="list-style-type: none"> <li>From the <b>Display</b> list, select the icons, and then click <b>Remove</b>.</li> </ul> <p>The icons are moved to the <b>Available</b> list.</p> <p><b>Note:</b> At least one icon must remain in the <b>Display</b> list.</p>

## 4 To rearrange the order of the icons:

To...	Do this...
Move an icon up or down one entry on the main toolbar	<ul style="list-style-type: none"> <li>From the <b>Display</b> list, select the icon, and then click <b>Up</b> or <b>Down</b>.</li> </ul>
Move an icon to the top or bottom of the main toolbar	<ul style="list-style-type: none"> <li>From the <b>Display</b> list, select the icon, and then click <b>Top</b> or <b>Bottom</b>.</li> </ul>

**Note:** Alternatively, you can drag the icon up and down the **Display** list.

- 5 To display or hide the icon labels:

To...	Do this...
Display the labels	<ul style="list-style-type: none"><li>• Select the <b>Show label for displayed tools</b> check box.</li></ul>
Hide the labels	<ul style="list-style-type: none"><li>• Clear the <b>Show label for displayed tools</b> check box.</li></ul>

- 6 To reset the preferences to the default site settings:

- Click **Reset**.
- A confirmation message is displayed. Click **Yes**.

- 7 Do one of the following:

- To apply the preferences, click **Apply**.
- To apply the preferences and close the **Preferences** dialog box, click **OK**.

## Power Scrolling preferences

The Power Scroll preferences specify whether to enable Power Scrolling, which enables you to quickly scroll through large multi-slice **series**. In addition, you can specify the following settings:

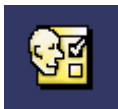
- Whether the scrolling speed is determined by how fast you move the mouse, or the location of the mouse pointer
- How to start Power Scrolling
- The direction to scroll through a series

For details on using Power Scrolling, see “**Moving through a series using Power Scrolling**” on page 3-13.

### Steps for this task

To set Power Scrolling preferences:

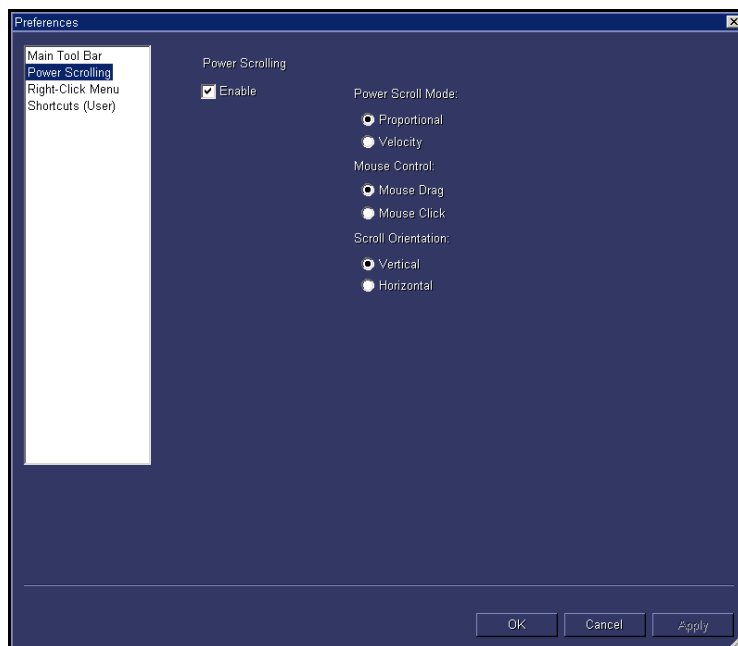
- 1 Click the **Preferences** icon on the main toolbar.



The **Preferences** dialog box is displayed.

- 2 Select **Power Scrolling** in the left pane. The **Power Scrolling** preferences are listed on the right.

Figure 8-2 Power Scrolling preferences



- 3 Specify whether to enable Power Scrolling.

To...	Do this...
Enable Power Scrolling	<ul style="list-style-type: none"> <li>Select the <b>Enable</b> check box.</li> </ul>
Disable Power Scrolling	<ul style="list-style-type: none"> <li>Clear the <b>Enable</b> check box.</li> </ul>

- 4 If Power Scrolling is enabled, set the **Power Scroll Mode**, which specifies how the scrolling speed is determined:

If...	Then...
Scrolling speed depends on how fast you move the mouse	<ul style="list-style-type: none"> <li>Click <b>Proportional</b>.</li> </ul>
Scrolling speed depends on the location of the mouser pointer	<ul style="list-style-type: none"> <li>Click <b>Velocity</b>.</li> </ul>

- 5 If Power Scrolling is enabled, set the **Mouse Control**, which specifies how to start Power Scrolling:

To...	Do this...
Start Power Scrolling by holding down the mouse wheel or middle mouse button	<ul style="list-style-type: none"> <li>Click <b>Mouse Drag</b>.</li> </ul>
Start Power Scrolling by clicking the mouse wheel or middle mouse button	<ul style="list-style-type: none"> <li>Click <b>Mouse Click</b>.</li> </ul>

- 6 If Power Scrolling is enabled, set the **Scroll Orientation**, which specifies the Power Scroll direction:

To...	Do this...
Scroll by moving the mouse up and down	<ul style="list-style-type: none"> <li>Click <b>Vertical</b>.</li> </ul>
Scroll by moving the mouse left and right	<ul style="list-style-type: none"> <li>Click <b>Horizontal</b>.</li> </ul>

- 7 Do one of the following:
- To apply the preferences, click **Apply**.
  - To apply the preferences and close the **Preferences** dialog box, click **OK**.

## Right-click menu preferences

Right-click menu preferences specify which menu options are included on the image right-click menu. The image right-click menu is displayed by right-clicking an image.

### Default site settings

The default image right-click menu contains the following options, in the listed order:

- **Select**
- **Annotate**
- **Window/Level**
- **Zoom**
- **Pan**
- **Flag**
- **Preferences**

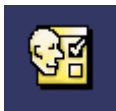
### Customizing the image right-click menu

You can:

- Add or remove menu options
- Rearrange the order of the menu options
- Reset the right-click menu preferences to the default site settings

To customize the image right-click menu:

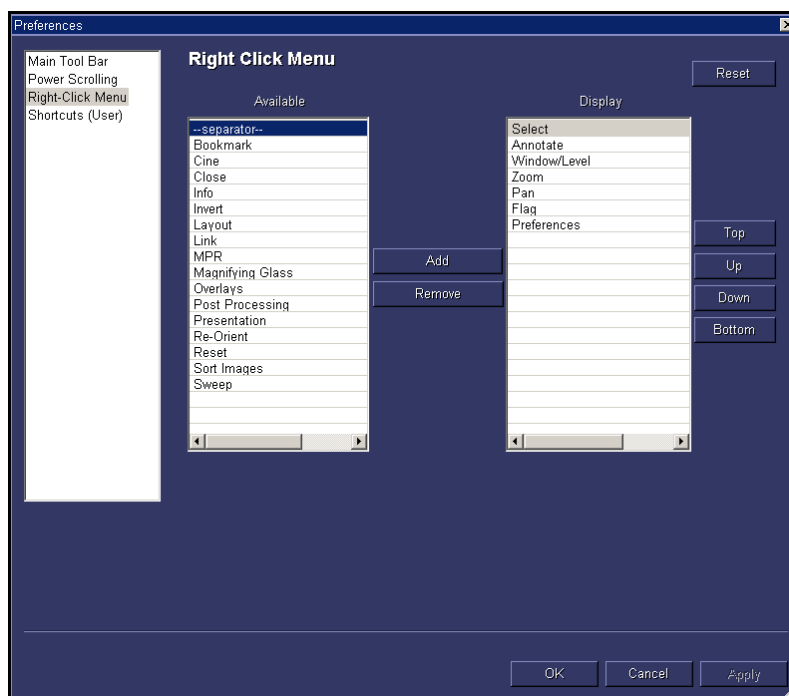
- 1 Click the **Preferences** icon on the main toolbar.



The **Preferences** dialog box is displayed.

- 2 Click **Right-Click Menu** in the left pane. The **Right Click Menu** preferences are listed on the right. The **Display** list shows the current right-click menu preferences.

Figure 8-3 Right Click Menu preferences



## 3 To add or remove menu options:

To...	Do this...
Add menu options	<ul style="list-style-type: none"> <li>From the <b>Available</b> list, select the menu options, and then click <b>Add</b>.</li> </ul> <p>The menu options are moved to the bottom of the <b>Display</b> list.</p>
Remove menu options	<ul style="list-style-type: none"> <li>From the <b>Display</b> list, select the menu options, and then click <b>Remove</b>.</li> </ul> <p>The menu options are moved to the <b>Available</b> list.</p> <p><b>Note:</b> At least one menu option must remain in the <b>Display</b> list.</p>

## 4 To rearrange the order of the menu options:

To...	Do this...
Move a menu option up or down	<ul style="list-style-type: none"> <li>From the <b>Display</b> list, select the menu option, and then click <b>Up</b> or <b>Down</b>.</li> </ul>
Move a menu option to the top or bottom of the image right-click menu	<ul style="list-style-type: none"> <li>From the <b>Display</b> list, select the menu option, and then click <b>Top</b> or <b>Bottom</b>.</li> </ul>

---

**Note:** Alternatively, you can drag the menu options up and down the **Display** list.

---

- 5 To reset the preferences to the default site settings, do the following:
  - Click **Reset**.
  - A confirmation message is displayed. Click **Yes**.
- 6 Do one of the following:
  - To apply the preferences, click **Apply**.
  - To apply the preferences and close the **Preferences** dialog box, click **OK**.

## User shortcuts

This section describes how to work with shortcuts for your personal use.

### In this section

This section contains the following topics:

Topic	See page
<a href="#">Adding and modifying user shortcuts</a>	8-10
<a href="#">Removing user shortcuts</a>	8-15
<a href="#">Restoring user shortcuts</a>	8-15

### Adding and modifying user shortcuts

Shortcuts enable you to perform tasks quickly. They eliminate the need to click an icon, select a menu option, or carry out a series of steps.

You can define shortcuts or modify shortcuts for your personal use. However, any definitions or modifications you make to shortcuts do not persist after you end your Advanced Viewer session.

For a list of tasks that can be performed using shortcuts, see [“Available shortcuts”](#) on page B-2.

### Restrictions for adding and modifying user shortcuts

The following restrictions exist:

- Some Windows® shortcuts are reserved and cannot be assigned to a command. For details, see [“Reserved Windows® shortcuts”](#) on page B-13.
- Some shortcuts are view-only and cannot be modified.



## Keyboard and mouse shortcuts

The following table describes the two types of shortcuts.

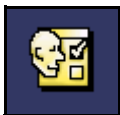
Shortcut type	Meaning
Keyboard	<p>A keyboard shortcut can be one of the following:</p> <ul style="list-style-type: none"><li>• A key on the keyboard:<ul style="list-style-type: none"><li>- A character, for example, a letter, number, or symbol</li><li>- A function key, for example, F2</li><li>- A navigation key, for example, UP arrow key</li></ul></li><li>• One or more modifier key (CTRL, ALT, SHIFT) in conjunction with a key on the keyboard.</li></ul>
Mouse	<p>A mouse shortcut can be one of the following:</p> <ul style="list-style-type: none"><li>• A mouse action:<ul style="list-style-type: none"><li>- Mouse click</li><li>- Mouse drag</li><li>- Wheel scroll</li></ul></li><li>• One or more modifier keys (CTRL, ALT, SHIFT) in conjunction with a mouse action.</li></ul>

A command can have one keyboard shortcut and/or one mouse shortcut. Commands represent tasks to which shortcuts can be assigned.

## Adding a user shortcut

To add a user shortcut:

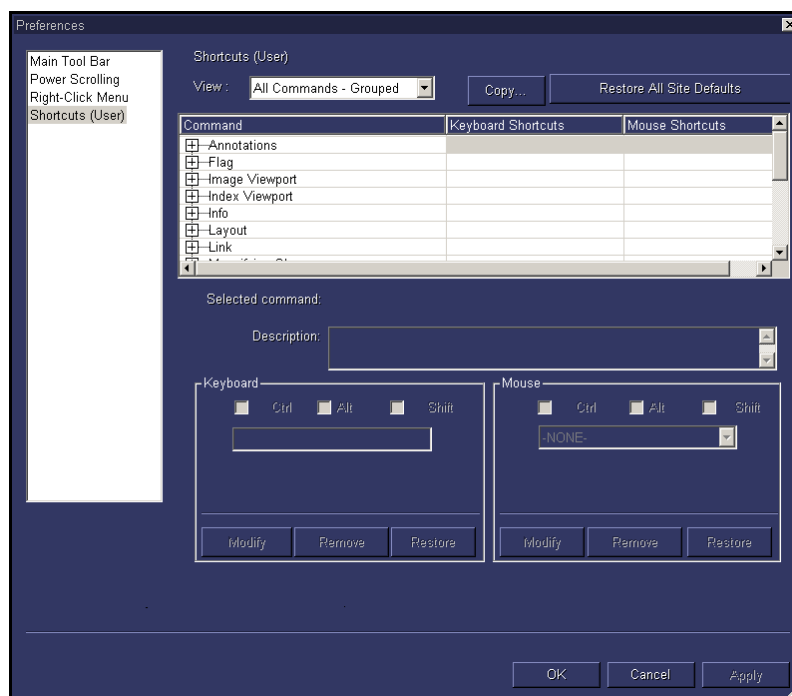
- 1 Click the **Preferences** icon on the main toolbar.



The **Preferences** dialog box is displayed.

- 2 Select **Shortcuts (User)** in the left pane. The user shortcuts are displayed on the right.

Figure 8-4 User shortcuts



## 3 List the commands in one of the following ways:

To...	Do this...
List commands belonging to a particular category only	<ol style="list-style-type: none"> <li>1 Click the <b>View</b> box, and then select <b>All Commands - Grouped</b>. The command categories are listed. See <a href="#">Figure 8-5</a> on page 8-12.</li> <li>2 Expand the category of your interest, by clicking the plus (+) sign beside it.</li> </ol>
List all the commands	<ul style="list-style-type: none"> <li>• Click the <b>View</b> box, and then select <b>All Commands - List</b>.</li> </ul>
List the basic commands only	<ul style="list-style-type: none"> <li>• Click the <b>View</b> box, and then select <b>Basic Commands</b>.</li> </ul> <p><b>Note:</b> Basic commands are pre-configured for your site.</p>

Figure 8-5 The command categories are listed

Command	Keyboard Shortcuts	Mouse Shortcuts
+ Annotations		
+ Flag		
+ Image Viewport		
+ Index Viewport		
+ Layout		

- 4 Click the command to which you want to assign a user shortcut.

Description of the selected command, if available, is displayed.

- 5 Define a keyboard shortcut and/or mouse shortcut for the command:

To...	Do this...
Define a keyboard shortcut	<ol style="list-style-type: none"><li>1 Under <b>Keyboard</b>, enter the shortcut key in the box below the check boxes.</li><li>2 If necessary, specify the modifier keys, by selecting the <b>Ctrl</b>, <b>Alt</b>, and/or <b>Shift</b> check boxes.</li><li>3 Click <b>Modify</b>.</li></ol>
Define a mouse shortcut	<ol style="list-style-type: none"><li>1 Under <b>Mouse</b>, click the box below the check boxes, and then specify the mouse action for the shortcut. The available options differ for different commands.</li><li>2 If necessary, specify the modifier keys, by selecting the <b>Ctrl</b>, <b>Alt</b>, and/or <b>Shift</b> check boxes.</li><li>3 Click <b>Modify</b>.</li></ol>

**Note:**

- A shortcut cannot be assigned to more than one command.
- Some commands may not support a keyboard shortcut or mouse shortcut.

- 6 Do one of the following:

- To apply the preferences, click **Apply**.
- To apply the preferences and close the **Preferences** dialog box, click **OK**.

## Modifying a user shortcut

To modify a user shortcut:

- 1 Follow steps 1-3 in “Adding a user shortcut” on page 8-11.
- 2 Click the command whose shortcut you want to modify. Description of the selected command, if available, is displayed.
- 3 Modify the keyboard shortcut and/or mouse shortcut as follows:

To...	Do this...
Modify a keyboard shortcut	<ol style="list-style-type: none"><li>1 Under <b>Keyboard</b>, specify a different shortcut key and/or modifier key.</li><li>2 Click <b>Modify</b>. This button is dimmed if the shortcut is view-only.</li></ol>
Modify a mouse shortcut	<ol style="list-style-type: none"><li>1 Under <b>Mouse</b>, specify a different mouse action, and/or modifier key.</li><li>2 Click <b>Modify</b>. This button is dimmed if the shortcut is view-only.</li></ol>

**Note:**

- A shortcut cannot be assigned to more than one command.
- Some commands may not support a keyboard shortcut or mouse shortcut.

- 4 Do one of the following:
  - To apply the preferences, click **Apply**.
  - To apply the preferences and close the **Preferences** dialog box, click **OK**.

## Removing user shortcuts

You can remove your user **shortcuts**.

### Restriction for removing user shortcuts

Some shortcuts are view-only and cannot be removed.

### Steps for this task

To remove a user shortcut:

- 1 Follow steps 1-3 in “**Adding a user shortcut**” on page 8-11.
- 2 Click the command whose shortcut you want to remove. Description of the selected command, if available, is displayed.
- 3 Remove the keyboard and/or mouse shortcut as follows:

To...	Do this...
Remove a keyboard shortcut	<ul style="list-style-type: none"><li>• Under <b>Keyboard</b>, click <b>Remove</b>.</li></ul>
Remove a mouse shortcut	<ul style="list-style-type: none"><li>• Under <b>Mouse</b>, click <b>Remove</b>.</li></ul>

---

**Note:** The **Remove** button is dimmed if the shortcut is view-only.

---

- 4 Do one of the following:
  - To apply the preferences, click **Apply**.
  - To apply the preferences and close the **Preferences** dialog box, click **OK**.

## Restoring user shortcuts

You can restore your user **shortcuts**, to match the default shortcuts. Default shortcuts are defined by users who have the authority to modify default shortcuts. If there is no default shortcut for the command, the user shortcut is deleted.

You can restore an individual user shortcut, or all user shortcuts at once.

### Steps for this task

To restore a user shortcut:

- 1 Follow steps 1-3 in “**Adding and modifying user shortcuts**” on page 8-10.
- 2 Click the command whose shortcut you want to restore. Description of the selected command, if available, is displayed.

- 3 Restore the keyboard and/or mouse shortcut as follows:

To...	Do this...
Restore a keyboard shortcut	<ul style="list-style-type: none"><li>Under <b>Keyboard</b>, click <b>Restore</b></li></ul>
Restore a mouse shortcut	<ul style="list-style-type: none"><li>Under <b>Mouse</b>, click <b>Restore</b></li></ul>

- 4 Do one of the following:
- To apply the preferences, click **Apply**.
  - To apply the preferences and close the **Preferences** dialog box, click **OK**.

### Restoring all user shortcuts

To restore all of your user shortcuts:

- Follow steps 1-2 in “[Adding a user shortcut](#)” on page 8-11.
- Click **Restore All Site Defaults**.  
A confirmation message is displayed.
- Click **Yes** to restore all user shortcuts to default shortcuts.

## Appendix A - Advanced Viewer work area

This section describes the Advanced Viewer work area.

### In this section

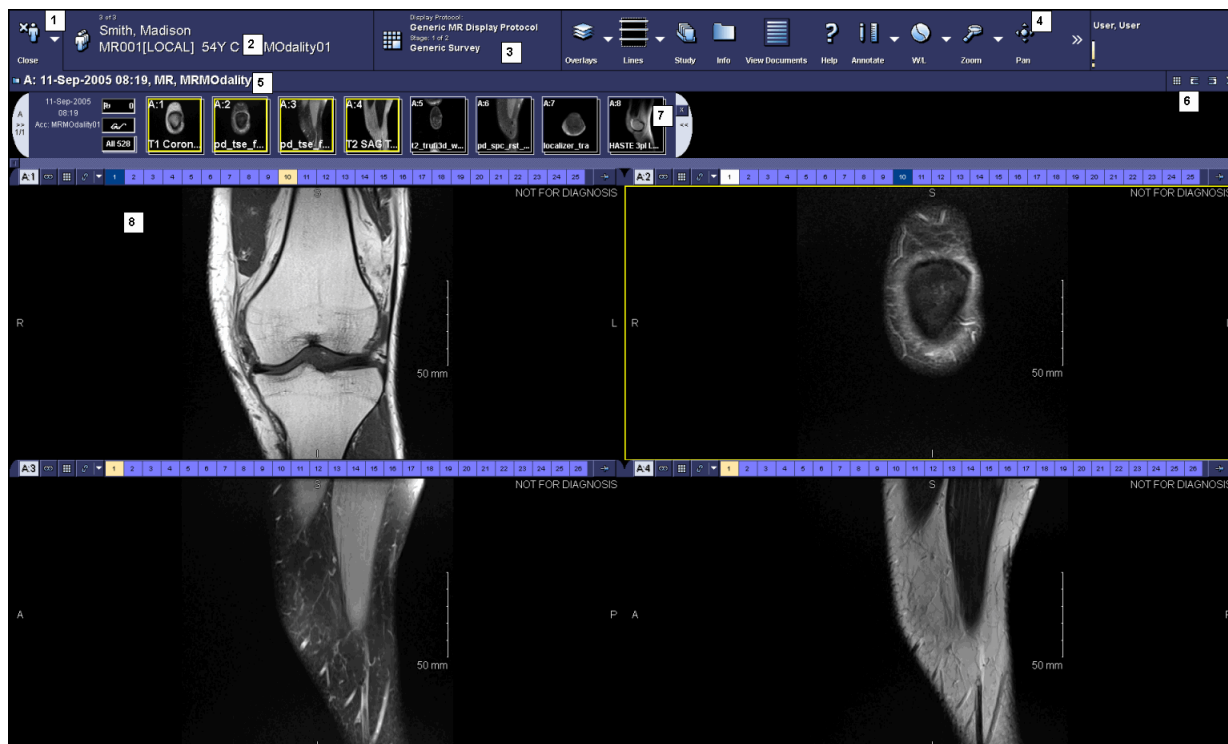
This section contains the following topics:

Topic	See page
Understanding the Advanced Viewer work area	A-2
Patient Identification button	A-4
Display Protocol button	A-5
Study Information bar	A-6
Study toolbar	A-8
Using the main toolbar	A-9
Using the Thumbnail toolbar	A-12
Understanding viewports	A-18

## Understanding the Advanced Viewer work area

This section identifies the main components of the Advanced Viewer work area.

Figure A-1 Advanced Viewer work area



### Work area components

The following table lists the components of the Advanced Viewer work area. The numbers indicate the location of the components.

Component	Description
1 Close icon	Closes all studies belonging to the patient.
2 <b>Patient Identification</b> button	Displays information about the patient whose study you are currently viewing. See “ <a href="#">Patient Identification button</a> ” on page A-4.
3 <b>Display Protocol</b> button	Displays information about the <a href="#">display protocol</a> applied to the study. See “ <a href="#">Display Protocol button</a> ” on page A-5.
4 Main toolbar	Displays a collection of icons. Each icon represents a feature of the Advanced Viewer. See “ <a href="#">Using the main toolbar</a> ” on page A-9.

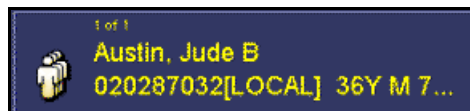


Component	Description (Continued)
5 Study Information bar	Displays information about the study. See “Study Information bar” on page A-6.
6 Study toolbar	Displays the icons for setting the screen layout and navigating studies. See “Study toolbar” on page A-8.
7 Thumbnail toolbar	<p>Provides an overview of each open study. The thumbnail toolbar indicates:</p> <ul style="list-style-type: none"><li>• The number of series in the study</li><li>• The types of images in the series</li><li>• The number of flagged images in the study</li><li>• Whether the study contains patient documentation (reports, audio messages, and/or diagrams)</li></ul> <p>See “Using the Thumbnail toolbar” on page A-12.</p>
8 Viewport	Enables you to view and manipulate images in a series. See “Understanding viewports” on page A-18.

## Patient Identification button

The Patient Identification button is located at the top of the **work area**. It displays information about the patient whose study you are currently viewing.

Figure A-2 Patient Identification button



### Information on the Patient Identification button

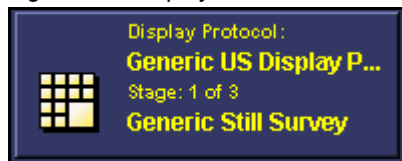
The Patient Identification button contains the following information:

Patient information	Details
Placement in the order of patients whose studies are open	The patients are sorted in ascending order (A-Z) by last name and first name.  For example, if studies for Bob Dendoff and Patricia Rose are open, <b>1 of 2</b> is displayed for Bob Dendoff.
Name	The patient name is displayed in the format of <i>last name, first name middle name</i> .
Patient ID	Identification number assigned to the patient. For a multi-site hospital, the ID Context that represents the site is also displayed beside the Patient ID.
Age	The patient's age at the time the study was performed. For patients who were under two years of age at the time the study was performed, their age is displayed in months, not years.  For example: <ul style="list-style-type: none"> <li>• <b>65Y</b> means that the patient was 65 years old.</li> <li>• <b>18M</b> means that the patient was 18 months old.</li> </ul>
Gender	The patient's anatomical sex. Possible options are: <ul style="list-style-type: none"> <li>• <b>F</b> (Female)</li> <li>• <b>M</b> (Male)</li> <li>• <b>O</b> (Other)</li> </ul> If the patient gender is unknown, it is not displayed.
Accession Number	Unique identification number that a <b>HIS</b> , <b>RIS</b> , or third-party ordering system assigns to a study. Some sites use this number to track patient visits for billing purposes.

## Display Protocol button

The Display Protocol button is located at the top of the **work area**. It displays information about the **display protocol** applied to the study you are currently viewing. For details on display protocols, see “**About display protocols**” on page 6-2.

Figure A-3 Display Protocol button



### Information on the Display Protocol button

The **Display Protocol** button contains the following information:

Display protocol information	Details
Name	<p>Displays the name of the display protocol applied to the study you are viewing. For example, <b>CT Head</b>.</p> <hr/> <p><b>Note:</b> When a <b>Bookmark</b> is applied to the study, <b>Bookmark in Use</b> is displayed instead. For details, see “<b>Using Bookmarks</b>” on page 2-97.</p> <hr/>
Current display protocol stage	<p>Displays the following information about the current display protocol stage:</p> <ul style="list-style-type: none"> <li>• Placement in the order of the stages, for example, <b>Stage: 1 of 4</b> means that the stage is the first of the four stages the display protocol contains.</li> <li>• Name of the stage. For example, <b>Survey</b>.</li> </ul> <p>For details on display protocol stages, see “<b>Understanding display protocol stages</b>” on page 6-8.</p>

### Using the Display Protocol button

When you click the **Display Protocol** button, you can apply another display protocol to the study.

For details, see “**Working with display protocols**” on page 6-1.

## Study Information bar

The Study Information bar displays information about the studies that you are currently viewing. It enables you to:



- View information about the anchor study and reference studies that are displayed on different monitors. The anchor study is the first study opened, and reference studies are additional studies opened for the same patient.
- Compare information about the anchor study and reference studies that are displayed on the same monitor.

Figure A-4 Study Information bar

■ A: 15-Aug-2004 19:56, CT, CT ORBITS/TEMPORAL W/O CONT., 7228-0062

### Information on the Study Information bar

The Study Information bar contains the following information.

Study information	Details
Other studies icon	<p>Whether the patient has other studies.</p> <p>The following icon indicates that the patient has only one study:</p>  <p>The following icon indicates that the patient has multiple studies:</p> 
Study priority	<p>The study priority is displayed if:</p> <ul style="list-style-type: none"> <li>• The study is the <b>anchor study</b>, and</li> <li>• The study has one of the two highest priorities (Stat or High)</li> </ul> <hr/> <p><b>Note:</b> The name of the priorities can be configured in McKesson Radiology PACS Admin™. For details, refer to the <i>McKesson Radiology PACS Admin™ User's Guide</i>.</p>

Study information	Details (Continued)
Study status	<p>The current standing of the study in the workflow.</p> <ul style="list-style-type: none"> <li>For the anchor study, the status is displayed if the status is <b>In-Progress</b>, <b>Needs Over-Read</b>, <b>Transcribed</b>, <b>Dictated</b>, or <b>Reported</b>.</li> <li>For the <b>reference studies</b>, the status is displayed if the status is <b>In-Progress</b> or <b>unreported</b>.</li> </ul> <p>For details on the study statuses, see the “<b>Glossary</b>” on page Glossary-1.</p>
Study Sequence	<p>The sequence in which studies were opened:</p> <ul style="list-style-type: none"> <li>The anchor study is indicated by the letter <b>A</b>.</li> <li>Reference studies are indicated by the letter <b>R</b>, followed by a number. The order of the reference studies is based on the study date. For example, the most recent reference study is labelled <b>R1</b>, the second most recent reference study is labelled <b>R2</b>, and so on.</li> </ul>
Study date	Date on which the study was performed. For example, 12-May-2010.
Study time	Time at which the study was performed. For example, 11:58.
Modality	Types of images the study contains. For example, MR.

### Using the Study Information bar

When you click the Study Information bar, you can list and open additional studies belonging to the patient. However, there must be additional studies belonging to the patient.

## Study toolbar





The Study toolbar enables you to set the screen layout and navigate studies. It is located below the main toolbar.

Figure A-5 Study toolbar



### Study toolbar icons

The Study toolbar includes the following icons.

Icon	Meaning
<b>Screen layout</b> 	Set the screen layout. For details, see <a href="#">“Setting the screen layout”</a> on page 3-19.
<b>Cycle Previous</b> 	Display the previous set of <a href="#">series</a> within the selected study. For details, see <a href="#">“Cycling series”</a> on page 3-15.
<b>Cycle Next</b> 	Display the next set of series within the selected study. For details, see <a href="#">“Cycling series”</a> on page 3-15.
<b>Close Study</b> 	Close the study. This icon is dimmed when no studies are open.

## Using the main toolbar

This section describes the main toolbar, and how to modify and resize it.

### In this section

This section contains the following topics:

Topic	See page
<a href="#">About the main toolbar</a>	<a href="#">A-9</a>
<a href="#">Modifying the main toolbar</a>	<a href="#">A-10</a>

## About the main toolbar

The main toolbar is a collection of icons. Each icon represents a feature or a task performed in Advanced Viewer. The main toolbar is displayed at the top right corner of the [work area](#).

Figure A-6 Main toolbar



**Note:** The icon labels can be displayed or hidden. For details, see [“Main toolbar preferences”](#) on page 8-2.

### Default main toolbar

The default main toolbar is displayed the first time you start Advanced Viewer. It contains the following icons, in the listed order:

- **Study List**
- **Display study details**
- **View Documents**
- **Help**
- **Annotate**
- **Window/Level**
- **Zoom**
- **Pan**
- **Flag**
- **Preferences**
- **Quit**

## Manipulating the main toolbar

The main toolbar can be quickly modified. See “Modifying the main toolbar” on page A-10.

## Modifying the main toolbar

You can quickly modify the main toolbar in the following ways:

- Add or remove an icon
- Rearrange order of an icon

---

**Note:** The main toolbar can also be modified in your Main toolbar Preferences. See “Main toolbar preferences” on page 8-2.

---

### Adding a main toolbar icon

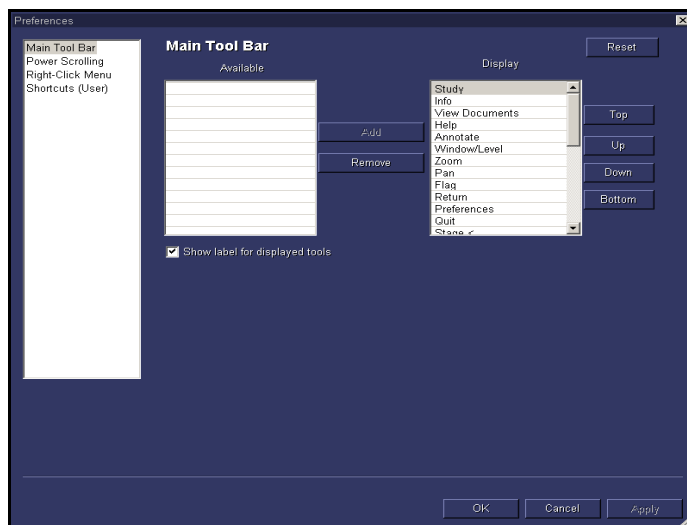
An icon can be added to the end of the main toolbar.

To add an icon to the main toolbar:

- 1 Right-click anywhere on the main toolbar, and then select **Add Tool**.

The **Preferences** dialog box is displayed, listing the **Main Tool Bar Menu** preferences on the right.

Figure A-7 Main Tool Bar preferences



- 2 In the **Available** list, click the icon that you want to add.
- 3 Click **Add**.  
The icon is moved to the bottom of the **Display** list.
- 4 Click **OK**.



## Removing a main toolbar icon

To quickly remove an icon:

- Right-click the icon that you want to remove from the main toolbar, and then select **Remove Tool**.

## Rearranging the order of the icons

To quickly rearrange the order of icons:

- Drag the icon to where you want to place on the main toolbar, and then release the mouse button.

## Using the Thumbnail toolbar

This section describes how to use the Thumbnail toolbar.

### In this section

This section contains the following topics:

Topic	See page
About the Thumbnail toolbar	A-12
Thumbnails	A-15
Thumbnail dialog box	A-16
Displaying and hiding the Thumbnail toolbar	A-16

### About the Thumbnail toolbar

The Thumbnail toolbar provides an overview of each open study. It contains the following information:

- Study containers for anchor and reference studies currently open for the same patient. The containers are ordered as follows, from left to right: the A1 study container (anchor study), the R1 study container (the most recent reference study based on the study date), the R2 study container (second most recent reference study), and so on.
- The number of **series** in the study
- Information about the series
- The number of flagged images in the study
- Whether the study contains **patient documentation** (reports, audio messages, and/or diagrams)

For details, see “Thumbnail toolbar components” on page A-13.

Figure A-8 Thumbnail toolbar



The Thumbnail toolbar can be displayed or hidden. See “Displaying and hiding the Thumbnail toolbar” on page A-16.

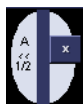
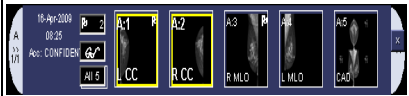



## Displaying the Thumbnail toolbar on multiple monitors




In a multiple monitor configuration, an exact copy of the Thumbnail toolbar is displayed on each screen. The thumbnails of the series currently displayed on all the monitors, are surrounded by a solid border. See also “[Thumbnail appearance](#)” on page A-15.

**Note:** If you switch between open studies, the Thumbnail toolbar no longer represents series displayed on all monitors, but only those displayed on the monitor where it is displayed. Only the thumbnails representing series currently displayed on each monitor are surrounded by a solid border.

## Thumbnail toolbar components

The following table describes the Thumbnail toolbar components.

Thumbnail toolbar component	Description
<p>Study Container</p> <p>Closed Study Container</p>  <p>Open Study Container</p> 	<p>Represents an open study for the patient. By default, the Study Container is open. You can:</p> <ul style="list-style-type: none"> <li>Close the Study Container, by clicking the collapse (&lt;&lt;) button on its right side.</li> <li>Re-open the Study Container, by clicking the expand (&gt;&gt;) button on its right side.</li> </ul> <p>You can also close the study, by clicking the close (x) button on its right side.</p>
<p>Flagged images button</p> 	<p>Identifies how many images are flagged in the study.</p> <p>You can display all the flagged images in a viewport, by dragging this button to the viewport.</p>
<p>All images button</p> 	<p>Identifies how many images the study contains.</p> <p>You can display all the images in a viewport by dragging this button to the viewport.</p>
<p>All images label</p> 	<p>Indicates that all images within the study cannot be displayed due to your site configuration.</p>

Thumbnail toolbar component	Description (Continued)
<p>Unviewed images button</p> 	<p>Indicates that some images in the study have not been viewed.</p> <p>You can:</p> <ul style="list-style-type: none"> <li>View the number of unviewed images by moving the mouse pointer over this button</li> </ul> <hr/> <p><b>Note:</b> The tooltip indicates the number of unviewed images. However, an MPR view is not an image, and its presence does not affect the number of unviewed images reported in the tooltip.</p> <p>Display all the unviewed images in a viewport, by dragging this button to the viewport. As a result, the display protocol stage is automatically changed to the Unviewed stage.</p> <hr/> <ul style="list-style-type: none"> <li>You are not able to change the images displayed by dragging the images or series thumbnail from the Thumbnail toolbar. To stop viewing unviewed images, you need to close the study.</li> </ul>
<p>Patient documentation icons</p> 	<p>Indicate whether the study contains any patient documentation, such as:</p> <ul style="list-style-type: none"> <li>Reports</li> <li>Voice clips</li> <li>Jot Pad diagrams</li> </ul> <p>You can access the patient documentation, by clicking the corresponding icon.</p>
<p>Thumbnail</p> 	<p>Represents a series. The first image for each series is used as the thumbnail. For details, see “<a href="#">Thumbnails</a>” on page A-15.</p>

## Using the Thumbnail toolbar

Using the Thumbnail toolbar, you can:

- Display images. For details, see “[Displaying a series in a viewport](#)” on page 3-2 and “[Displaying all images and all flagged images in a viewport](#)” on page 3-3.

- Change the sequence of the series in the study. For details, see “[Re-ordering series](#)” on page 3-18.
- Display images in a Zoom window or Survey window. For details, see “[Displaying a series in a separate window](#)” on page 3-4.
- Close the study.

## Thumbnails






Each thumbnail represents a [series](#). The thumbnail displays the following information about the series it represents:

- Series sequence. For example, **A:1** indicates the first series of the anchor study, and **R1:2** indicates the second series of the first reference study. The series sequence is located at the top left corner of the thumbnail.
- Series description. The series description is located at the bottom of the thumbnail.

### Thumbnail appearance

The appearance of the thumbnails indicates information about the images in the series.

The following table describes the thumbnail display properties.

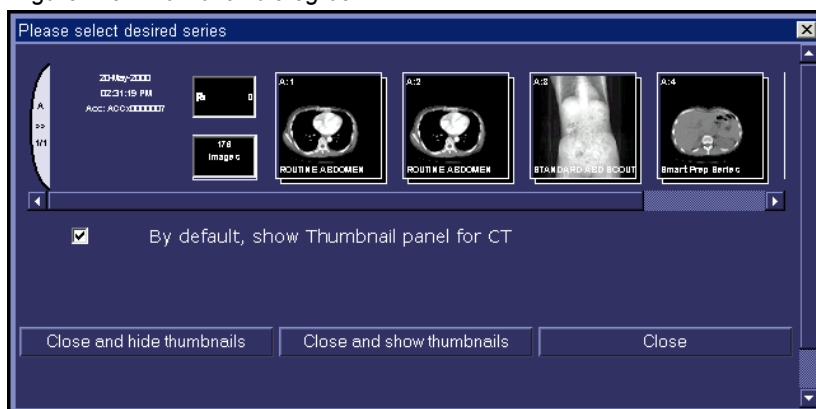
Thumbnail display property	Meaning
 A:1 SCOUT	The series contains one image only.
 A:2 AXIALS...	The series contains more than one image.
 R1:1 Cine	The series contains a <a href="#">cine clip</a> . For details, see “ <a href="#">Working with cine clips</a> ” on page 4-1.
 A:1 CHEST ADD1	The series is currently displayed in a viewport.  <b>Note:</b> The thumbnail is surrounded by a solid border and the series description is displayed in bold text.
 A:2 ABDW/O	The series contains flagged images.  <b>Note:</b> A flag is displayed at the top right corner of the thumbnail.

## Thumbnail dialog box

The Thumbnail dialog box provides an overview of the current patient's open studies. It contains the same components as the Thumbnail toolbar. For details, see “[Thumbnail toolbar components](#)” on page A-13.

The Study Containers that represent the open studies are displayed one above the other, with the anchor study located at the top, and then the reference studies.

Figure A-9 Thumbnail dialog box



### Displaying the Thumbnail dialog box

To display the **Thumbnail** dialog box:

- Click the Series Selector button on a viewport. The button indicates the currently displayed series in the viewport. For details on viewports, see “[Understanding viewports](#)” on page A-18.



### Using the Thumbnail dialog box

Using the **Thumbnail** dialog box, you can:

- Display a series in a viewport. For details, see “[Displaying a series using the Thumbnail dialog box](#)” on page 3-3.
- Display or hide the Thumbnail toolbar. For details, see “[Displaying and hiding the Thumbnail toolbar](#)” on page A-16.

## Displaying and hiding the Thumbnail toolbar

If you need additional viewing space, you can hide the Thumbnail toolbar. The Thumbnail toolbar can be redisplayed at any time during the review session. You can display or hide it, using the **Thumbnail** dialog box.

For details, see “[About the Thumbnail toolbar](#)” on page A-12.

**Note:** The Thumbnail toolbar is displayed or hidden for the **modality** of the **anchor study**. For example, if you hide the Thumbnail toolbar for a CT anchor study, the next time you open a CT study, the Thumbnail toolbar is hidden.

## Steps for this task

To display or hide the Thumbnail toolbar:

- 1 Click the Series Selector button on a viewport.



The **Thumbnail** dialog box is displayed. See [Figure A-9](#) on page A-16.

- 2 Perform one of the following steps:

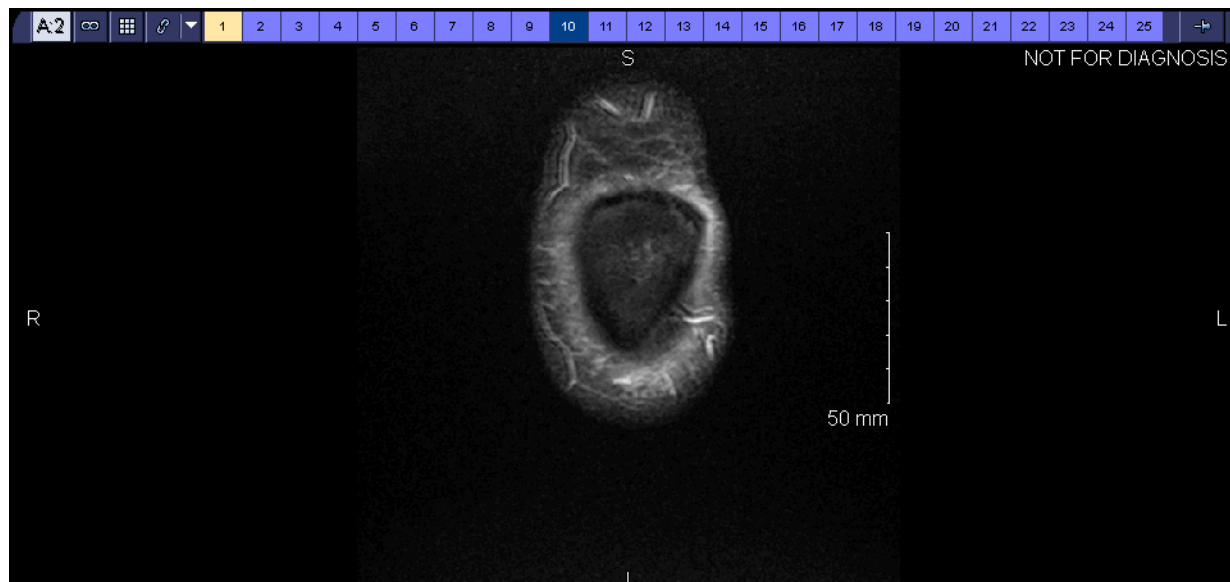
To...	Do this...
Display the Thumbnail toolbar when studies of a specific modality are opened	<ul style="list-style-type: none"> <li>• Select the check box <b>By default, show thumbnail panel for</b>.</li> </ul>
Display the Thumbnail toolbar, and then closing the <b>Thumbnail</b> dialog box	<ul style="list-style-type: none"> <li>• Click <b>Close and show thumbnails</b>.</li> </ul>
Hide the Thumbnail toolbar, and then closing the <b>Thumbnail</b> dialog box	<ul style="list-style-type: none"> <li>• Click <b>Close and hide thumbnails</b>.</li> </ul>
Close the <b>Thumbnail</b> dialog box without affecting the Thumbnail toolbar	<ul style="list-style-type: none"> <li>• Click <b>Close</b>.</li> </ul>

The Thumbnail toolbar is displayed or hidden accordingly.

## Understanding viewports


A viewport is a panel where images in a **series** are displayed and manipulated.

Figure A-10 Viewport








### Viewport components

The following table describes the viewport components.

Viewport component	Description
<p>Series Selector button</p> 	<p>Identifies the study and series displayed in the viewport. For example,</p> <ul style="list-style-type: none"> <li><b>A:1</b> denotes the anchor study, first series</li> <li><b>R1:1</b> denotes the first reference study of any modality, first series</li> <li><b>R1 (CT1):1</b> denotes the first reference study of CT modality, first series</li> </ul> <p>In addition, the Series Selector buttons distinguish the open studies by having different colors and font styles.</p>



Viewport component	Description (Continued)
<b>Display Mode icon</b> 	<p>Indicates the types of images currently displayed. In addition, you can:</p> <ul style="list-style-type: none"> <li>• Select the display mode for the series. See <a href="#">“Selecting the series display mode”</a> on page 3-7.</li> <li>• Display all images, selected images, or flagged images in the series. See <a href="#">“Specifying the series viewing scope”</a> on page 3-9.</li> <li>• Create <a href="#">Multi-Planar Reconstruction (MPR) images</a>. See <a href="#">“About creating MPR images”</a> on page 2-32.</li> </ul>
<b>Viewport Layout icon</b> 	<p>Enables you to specify how many images to display in the viewport. See <a href="#">“Setting the viewport layout”</a> on page 3-20.</p>
<b>Link icon</b> 	<p>Indicates whether the series is currently linked with another series. A linked series can be scrolled with other linked series.</p> <p>You can link or unlink the series. See <a href="#">“Linking and unlinking series”</a> on page 3-21.</p>

Viewport component	Description (Continued)
<p>Chits</p> 	<p>A chit may represent one image or a group of two or more images within a series. This depends on the following factors:</p> <ul style="list-style-type: none"> <li>• Number of images contained in the series</li> <li>• Size of the viewport</li> <li>• Screen resolution</li> </ul> <p>You can display an image by clicking the corresponding chit. If the chit represents a group of images, click the chit to display the first image within the group, and then rotate the mouse wheel backward to scroll through the rest of the images.</p> <hr/> <p><b>Warning:</b> To ensure that all images that you want to view are displayed, and that no image is unintentionally skipped, first click the image, and then rotate the mouse wheel backward or forward, depending on the direction in which you want to scroll through the series.</p> <hr/> <p>Depending on the number of images contained in the series, different display properties are applied to the chits. See “<a href="#">Chit display properties</a>” on page A-22.</p> <p>Chits can appear in different colors. See “<a href="#">Chit colors</a>” on page A-21.</p>
<p>Pin icon</p> 	<p>Indicates whether a viewport is pinned or not. A pinned viewport is not used in cycling series. For details, see “<a href="#">Cycling series</a>” on page 3-15.</p> <p>You can pin or unpin a viewport. See “<a href="#">Pinning and unpinning a viewport</a>” on page 3-16.</p>
Image viewing area	<p>Holds images in the series.</p> <p>You can manipulate displayed images. For details, see “<a href="#">Working with images</a>” on page 2-1.</p>

Viewport component	Description (Continued)
Patient orientation markers	<p>Patient orientation markers are located on all four sides of the viewport. These markers indicate the orientation of the patient anatomy in the viewport.</p> <p>Patient orientation markers are always displayed for each image based on the orientation information in its DICOM file.</p> <hr/> <p><b>Warning:</b> When you reorient the image, note the patient orientation markers to confirm the actual orientation of the patient when the study was performed.</p> <hr/> <p>For details on the meaning of each marker, see <a href="#">“Patient orientation markers”</a> on page A-21.</p>

### Patient orientation markers

The following table lists the patient orientation markers:

Marker	Meaning
A	Anterior
P	Posterior
R	Right
L	Left
I	Inferior
S	Superior

### Chit colors

Chits can appear in different colors. Different chit colors help you to identify the following items:

- Active images
- Visible images
- Selected images
- Viewed images
- Loaded images
- Partially loaded images
- Not loaded images
- Images marked for deletion

Figure A-11 Example of color-coded chits



The chit colors are assigned at installation. For details, contact McKesson Support.

## Chit display properties

Depending on the number of images contained in the series, chits can have different display properties. The following table describes the chit display properties.

Chit display property	Description
Fully expanded 	Image numbers are displayed on the chits.
Partially compressed 	The series contains a higher number of images. Image numbers are not displayed, and the chit width is reduced.
Fully compressed 	The series contains an even higher number of images, and the chits are shown as a continuous band.

## Appendix B - Using shortcuts

This section describes the Advanced Viewer shortcuts.

**Caution:** Any changes you make to user shortcuts are discarded after you close the Advanced Viewer.

### In this section

This section contains the following topics:

Topic	See page
<a href="#">Overview of using shortcuts</a>	<a href="#">B-1</a>
<a href="#">Available shortcuts</a>	<a href="#">B-2</a>
<a href="#">Reserved Windows® shortcuts</a>	<a href="#">B-13</a>

## Overview of using shortcuts

Shortcuts enable you perform a task quickly. They eliminate the need to click an icon, select a menu option, or carry out a series of steps. For a list of tasks that can be performed using shortcuts, see [“Available shortcuts”](#) on page B-2.

Shortcuts are defined by individual users for their personal use. You can also modify and remove your personal shortcuts. For details, see [“User shortcuts”](#) on page 8-10.

## Available shortcuts

This section describes commands to which shortcuts can be assigned.

### In this section

This section contains the following topics:

Topic	See page
Annotations commands	B-2
Flag command	B-3
Image Viewport commands	B-4
Index Viewport commands	B-5
Layout commands	B-6
Link command	B-7
Magnifying Glass command	B-8
Miscellaneous commands	B-8
Orientation commands	B-9
Post Processing command	B-9
Presentations and Bookmarks commands	B-10
Window/Level commands	B-10
Workflow commands	B-11
Zoom/Pan commands	B-12

## Annotations commands

This section describes the Annotations commands to which **shortcuts** can be assigned. For details, see “**Adding annotations**” on page 2-63.

### Commands and their descriptions

The following table describes the commands.

Command	Description	System default
Arrow	Place arrows on an image.	A
Calibrate	Define the measurement scale.	
Hide Cobb Angle	Draw and measure a <b>Cobb angle</b> .	

Command	Description (Continued)	System default
Hide Cover	Mask an image, by covering an area of the image with a rectangle.	
Delete All	Delete all temporary annotations from a single image, selected images, or all images in the series.	
Hide Ellipse	Place ellipses on an image.	SHIFT+C
Hide Elliptical ROI	Define an Elliptical Region of Interest (ROI), and measure its pixel intensity parameters, area, and perimeter.	C
Hide Eraser	Delete a temporary annotation.	
Hide Intensity Analysis	Measure the pixel intensity of a point.	=
Hide Label Disk	Add disk labels.	SHIFT+D
Label Vertebrae	Add vertebrae labels.	V
Linear Distance	Draw a line and measure the distance between the endpoints.	D
Simple Angle	Draw and measure an angle in degrees.	SHIFT+A
Annotations	Display or hide <a href="#">annotations</a> .	
Text	Place comments on an image.	T

## Flag command

This section describes the Flag command to which a [shortcut](#) can be assigned. For details, see “[Flagging and unflagging images](#)” on page 2-7.

### Command and its description

The following table describes the command.

Command	Description	System default
Toggle Flag Status	Flag or unflag selected images.	SPACEBAR

## Image Viewport commands

This section describes the Image Viewport commands to which **shortcuts** can be assigned. For details, see the following topics:

- “**Selecting and deselecting images**” on page 2-5
- “**Navigating the display protocol stages**” on page 6-10

### Commands and their descriptions

The following table describes the commands.

Command	Description	System default
Display Survey Window	Display the series in a Survey window.	
Display Survey Window on Auxiliary Screen	Displays the series in a Survey window on the auxiliary monitor.	
Display Zoom Window	Display the <b>series</b> in a Zoom window.	
Display Zoom Window on Auxiliary Screen	Display the series in a Zoom window on the auxiliary monitor.	
Jump To End	Display the last image of the series	END
Jump To Middle	Display the middle image of the series.	INSERT
Jump To Start	Display the first image of the series.	HOME
Page Backward	Scroll the series backward by one page.	PAGE UP
Page Forward	Scroll the series forward by one page.	PAGE DOWN
Row Backward	Scroll the series backward by one row.	UP arrow
Row Forward	Scroll the series forward by one row.	DOWN arrow
Select multiple images	Select multiple images within the same or different series.	CTRL+Click  <b>Note:</b> This shortcut is view-only.
Select single image	Select an image.	Click  <b>Note:</b> This shortcut is view-only.



Command	Description (Continued)	System default
Show Next Stage	Display the display protocol stage immediately after the currently displayed stage.	]
Show Previous Stage	Display the <b>display protocol stage</b> immediately preceding the currently displayed stage.	[

## Index Viewport commands

This section describes the Index Viewport commands to which **shortcuts** can be assigned. For details, see the following topics:

- “**About creating MPR images**” on page 2-32
- “**Creating MPR images**” on page 2-32
- “**Viewing cine clips**” on page 4-4

## Commands and their descriptions

The following table describes the commands.

Command	Description	System default
Clear MPR Range	Create <b>Multi-Planar Reconstruction (MPR)</b> images for the entire series.	
End MPR Range	Mark the image as the last image for creating MPR images.	
Loop mode	Play the <b>cine clip</b> continuously in a loop, until you manually stop or pause the cine clip.	
Once through mode	Play the cine clip once from beginning to end.	
Wave mode	Play the cine clip from beginning to end, then reverse and play the clip from end to beginning.	
Play All/Stop All toggle	Play and pause all cine clip, or <b>series</b> in Cine mode.	CTRL+SHIFT+P
Play/Stop toggle	Play and pause the cine clip, or series in Cine mode.	CTRL+P
Speed decrease	Decrease the cine playback speed.	
Speed full	Play the cine clip at its acquisition frame rate.	

Command	Description (Continued)	System default
Speed half	Play the cine clip at half of its acquisition frame rate.	
Speed increase	Increase the cine playback speed.	
Speed quarter	Play the cine clip at a quarter of its acquisition frame rate.	
Start MPR Range	Mark the image as the first image for creating MPR images.	
Switch to Axial View	Create MPR images in the <b>axial</b> plane.	ALT+A
Switch to Coronal View	Create MPR images in the <b>coronal</b> plane.	ALT+C
Switch to Sagittal View	Create MPR images in the <b>sagittal</b> plane.	ALT+S

## Layout commands

This section describes the Layout commands to which **shortcuts** can be assigned. For details, see the following topics:

- “Moving series between viewports” on page 3-10
- “Navigating a series” on page 3-12
- “Cycling series” on page 3-15
- “Setting the viewport layout” on page 3-20

## Commands and their descriptions

The following table describes the commands.

Command	Description	System default
Cycle all series backward	Display the previous set of series, in the unpinned viewports.	LEFT arrow
Cycle all series forward	Display the next set of series, in the unpinned viewports.	RIGHT arrow
Cycle series backward	Display the previous series in the viewport.	CTRL+LEFT arrow
Cycle series forward	Display the next series in the viewport.	CTRL+RIGHT arrow

Command	Description (Continued)	System default
Drag and Drop Image Viewports	Move a <b>series</b> from one viewport to another	Drag  <b>Note:</b> This shortcut is view-only.
Screen layout 1x1	Set the screen layout to <b>One Up</b> .	SHIFT + 1
Screen layout 1x2	Set the screen layout to <b>Vertical Split</b> .	SHIFT + 2
Screen layout 2x1	Set the screen layout to <b>Horizontal Split</b> .	SHIFT + 3
Screen layout 2x2	Set the screen layout to <b>Four Up</b> .	SHIFT + 4
Screen layout 3x3	Set the screen layout to <b>Nine Up</b> .	SHIFT + 5
Viewport layout 1x1	Set the viewport layout to <b>One Up</b> .	
Viewport layout 1x2	Set the viewport layout to <b>Vertical Split</b> .	2
Viewport layout 2x1	Set the viewport layout to <b>Horizontal Split</b> .	3
Viewport layout 2x2	Set the viewport layout to <b>Four Up</b> .	4
Viewport layout 3x3	Set the viewport layout to <b>Nine Up</b> .	5

## Link command

This section describes the Link command to which a **shortcut** can be assigned. For details, see “**Working with linked series**” on page 3-21.

### Command and its description

The following table describes the command.

Command	Description	System default
Interactive Scroll To Point	Interactively display a point in the linked series.	CTRL+SHIFT+Drag
Link	Link the viewport.	
Link All	Link all viewports.	
Offset by Frame Count	Apply an offset to the <b>series</b> , based on the number of frames.	
Offset by Spatial	Apply an offset to the series, based on spatial relationship.	5 <sup>th</sup> drag

Command	Description (Continued)	System default
Precise Registration	Apply precise registration.	
Quick Registration	Apply quick registration to the linked series.	
Remove Active Series Registration	Remove the registration from the series.	
Remove All Registration	Remove all registrations from the study.	
Remove Offset	Remove the offset from the series.	
Reset All	Remove all offsets and registrations from the study.	
Unlink	Unlink the viewport.	
Unlink All	Unlink all viewports.	

## Magnifying Glass command

This section describes the Magnifying Glass command to which a **shortcut** can be assigned. For details, see “**Magnifying a region of interest (ROI)**” on page 2-24.

### Command and its description

The following table describes the command.

Command	Description	System default
Launch magnifying glass	Display the Magnifying Glass.	SHIFT+M

## Miscellaneous commands

This section describes the Miscellaneous commands to which **shortcuts** can be assigned. For detail, see the following topics:

- “**Viewing images**” on page 2-9
- “**Applying post processing**” on page 2-59

### Commands and their descriptions

The following table describes the commands.

Command	Description	System default
Display DICOM Header	View DICOM header information for the image.	H

Command	Description (Continued)	System default
Invert Image Series	Reverse the gray values of all images in the series.	I
Show Scale	Display or hide the scale indicator.	
Toggle DICOM Bitmap Overlays	Display or hide the DICOM bitmap overlays.	CTRL+ B
Toggle Text	Display all or minimal <b>text overlay</b> , or hide it.	

## Orientation commands

This section describes the Orientation commands to which **shortcuts** can be assigned. For details, see “**Reorienting images**” on page 2-23.

### Commands and their descriptions

The following table describes the commands.

Command	Description	System default
Flip Horizontally	Flip the image horizontally, as if viewing it in a mirror.	SHIFT+H
Flip Vertically	Flip the image vertically, as if viewing it upside down.	SHIFT+V
Rotate Clockwise	Rotate the image 90° to the right.	SHIFT+RIGHT arrow
Rotate Counter-Clockwise	Rotate the image 90° to the left.	SHIFT+LEFT arrow

## Post Processing command

This section describes the Post Processing command to which a **shortcut** can be assigned. For details, see “**Applying post processing**” on page 2-59.

### Command and its description

The following table describes the command.

Command	Description	System default
Activate Post Processing	Display the <b>Post Processing</b> dialog box.	SHIFT+O

## Presentations and Bookmarks commands

This section describes the Presentations and Bookmarks commands to which **shortcuts** can be assigned. For details, see “Working with study presentations” on page 2-93 and “Using Bookmarks” on page 2-97.

### Commands and their descriptions

The following table describes the commands.

Command	Description	System default
Load Bookmark	Apply a <b>Bookmark</b> to the study.	
Load Presentation	Apply a <b>study presentation</b> to the study.	
Make Current	Make a historical <b>annotation</b> set the working annotation set.	

## Window/Level commands

This section describes the Window/Level commands to which **shortcuts** can be assigned. For details, see “Changing the image contrast and brightness” on page 2-37.

### Commands and their descriptions

The following table describes the commands.

Command	Description	System default
Activate Window/Level Tool	Display the <b>Window/Level</b> panel.	
Apply Default	Apply the Default Window/Level.	
Apply Estimate	Apply the Estimate Window/Level.	
Preset <name>	Apply the corresponding Window/Level <b>preset</b> .	

## Workflow commands

This section describes the Workflow commands to which **shortcuts** can be assigned.

### Commands and their descriptions

The following table describes the commands.

Command	Description	System default
Close All Studies	Close all open studies.	
Close Study	Close the study.	F7

## Zoom/Pan commands

This section describes the Zoom/Pan commands to which **shortcuts** can be assigned. For details, see “**Zooming and panning images**” on page 2-16.

### Commands and their descriptions

The following table describes the commands.

Command	Description	System default
100%	Display the images at the original image size.	
200%	Display the images at 200% of the original image size.	
50%	Display the images at 50% of the original image size.	
Interactive Pan	Use the mouse to pan images, without displaying the <b>Zoom and Pan</b> panel.	SHIFT+Drag
Interactive Zoom In Place	Use to mouse to zoom images, without displaying the <b>Zoom and Pan</b> panel.	CTRL+Mouse wheel
Life Size	Display the images at their true physical size.	
Match ROI	Match the region of interest (ROI) of all displayed images to the last selected image.	
Show Pan Tool	Display the <b>Zoom and Pan</b> panel, and select the Pan tool.	SHIFT+P
Show Zoom Panel	Display the <b>Zoom and Pan</b> panel, and select the Zoom tool.	SHIFT+Z
Zoom In	Zoom the images to 50% larger than the current size.	
Zoom Out	Zoom the images to 50% smaller than the current size.	
Zoom To Fit	Zoom the images to fit the viewport.	4 <sup>th</sup> mouse click



## Reserved Windows® shortcuts

Advanced Viewer reserves **shortcut** keys that are commonly used in Windows®. These reserved shortcuts cannot be assigned to frequently performed tasks in Advanced Viewer.

### List of reserved Windows® shortcuts

The following table describes the reserved Windows® shortcuts.

Shortcut	Meaning
CTRL+ALT+DELETE	Open the Windows® Task Manager.
ALT+TAB	Switch to another open application.
ESC	Close the dialog box.
ALT+F4	Close the dialog box. If no dialog box is currently displayed, this shortcut displays the quit confirmation message.
ALT+PRINT SCREEN	Print the active window.
F1	Open the Online Help for the current application.



# Glossary

## **Accession Number**

Unique identification number that a HIS, RIS, or third-party ordering system assigns to a study. Some sites use this number to track patient visits for billing purposes.

## **Administrator**

User role for individuals who manage user accounts and user rights using McKesson Radiology PACS Admin™. They also manage other information for the site, such as procedure types and work group.

## **anchor study**

The first study opened for a particular patient. It is usually the most recent study created for that patient.

## **annotations**

Text, drawings, and drawing with measurements that are added to images. Annotations can be either hidden or displayed.

## **ASCII**

The acronym for the American Standard Code for Information Interchange. ASCII is a code for representing English characters as numbers. Most computers use ASCII codes to represent text, making it possible to transfer data from one computer to another. Text files stored in ASCII format are sometimes called ASCII files.

## **axial**

A plane that runs parallel to the ground, dividing the body into top and bottom sections.

## **body region**

The part of body that is examined, for example, Skull, Abdomen, and Shoulder. Body regions are associated with procedure types.

## **Bookmark**

A Bookmark saves the display properties of the anchor study and open reference studies. Each Bookmark is associated with the anchor study.

## **CAD**

Computer-aided Detection (CAD) programs use computerized image algorithms to identify suspicious regions of interest on Mammography images, and then highlight them for radiologists to review.

**CD-R**

Stands for CD-Recordable. A type of write-once-read-many (WORM) optical disks to which images can be exported from a study. Users can only record information onto a CD-R once.

**CD-RW**

Stands for CD-ReWriteable. A type of rewriteable optical disks to which images can be exported from a study. Users can erase previously recorded information and record new information onto a CD-RW.

**cine clip**

A time-based image that contains a sequence of frames. You can play, trim, and export cine clips.

**Cobb angle**

The angle between two non-intersecting lines. Cobb angles are used to measure spinal scoliosis.

**color depth**

Color depth indicates the number of colors that a single pixel can display on a monitor screen. The number of colors can range from 16 (4 bit color) to 4,294,967,295 (32 bit color).

**compression**

A technique used to reduce the size of a file. Compressing images is especially useful if you need more disk space and/or wish to transfer images electronically.

**compression ratio**

A value that shows approximately how much a file has been decreased in size.

**coronal**

A plane that runs perpendicular to the ground, dividing the body into front and back sections.

**cycle series**

Cycling series enables you to quickly page through series, to identify series that are relevant for making a diagnosis. You can specify which viewports to use for cycling series.

**Default Window/Level**

Window/Level values determined by the system. It is perceived as the best available Window/Level for the images.

**diagnosis**

A brief summary of a patient's condition. A diagnosis is made after images in the study are interpreted.

**DICOM**

DICOM stands for Digital Imaging and Communications in Medicine Standard. This standard protocol is intended for communicating medical digital images among printers, workstations, acquisition modules and file servers. It was developed by the American College of Radiology (ACR) and National Electrical Manufacturers Association (NEMA). DICOM is also a part of the developing European standard by CEN, and Japanese standard by JIRA.

**DICOM file**

Each image is based on its DICOM file. DICOM files are generated by the imaging device and interpreted by McKesson Radiology™, before an image is displayed on the monitor. Each DICOM file is divided into two parts: DICOM Header, which contains all the patient and study data associated with the image, and Other Image Data, which conveys the pixel information.

**DICOM header**

Part of a DICOM file that contains all the patient and study data associated with the image.

**display protocol**

A digital equivalent of a hanging protocol. A display protocol contains an ordered collection of display protocol stages through which the user can navigate to view the anchor study and any reference studies in a useful and organized fashion.

**display protocol stage**

A display protocol stage can be interpreted as a display protocol within a display protocol. It specifies which images are displayed and how they are displayed. Multiple stages may exist within a single display protocol, allowing the user to view images in different context.

**Estimate Window/Level**

Window/Level values estimated based on histogram analysis of the image.

**ethnic origin**

The ethnic or racial background of a patient.

**frame of reference**

The frame of reference consists of internal coordinates that define the spatial information of the image.

**grayscale**

A range of gray levels consisting of various shades of gray. The gray scales of scanners and terminals are determined by the number of grays, or steps between black and white, that they can recognize and reproduce. Numbers higher than zero indicate brighter pixels. Zero is usually black.

**histogram**

A histogram depicts the frequency distribution of image intensities. The horizontal axis in a histogram shows the pixel values; the vertical axis shows the pixel counts

**hospital information system (HIS)**

An integrated system for keeping and tracking patient records.

**Hounsfield Unit (HU)**

The intensity unit for CT images. HU conveys the relative density of a pixel value compared to water.

**ID Context**

A name that represents either the location where the patient receives an examination, or the HIS/RIS that schedules the study. An ID Context is necessary for multi-site hospitals, where a patient may have examinations at different locations, resulting in more than one Patient ID. Also known as ordering system.

**image**

A single scan in a study. Each scan produces an image on the monitor display which is saved to the PACS.

**image device**

An image capturing device.

**image processing (or manipulation)**

The process of altering images that have been scanned or captured by a digital recording device. One can modify the image by changing its size, color, contrast and brightness, or compare and analyze images for characteristics that the human eye cannot perceive. Image processing can be broken down into several sub-categories including compression, enhancement, filtering, distortion, display, coloring, and editing.

**Indications**

A brief description of why the study is scheduled, for example, the patient's symptom.

**In-Progress study**

A study whose images are being captured by an image device or transferred to McKesson Radiology™. Once the image capturing or transfer is finished, the study becomes a Performed study.

**Integrating the Healthcare Enterprise (IHE)**

An initiative designed to stimulate the integration of the information systems. Its fundamental objective is to ensure that all required information for medical decisions is correct, and available to healthcare professionals. The approach employed in the IHE initiative is not to define new integration standards but rather to support the use of existing standards, such as DICOM and HL7, in their respective domains.

**intensity unit**

A unit of measurement for pixel intensity. Hounsfield Unit (HU) is the intensity for CT images, and Optical Density (OD) is the intensity unit for CR/DR/DX images.

**JPEG**

Stands for Joint Photographic Experts Group. JPEG usually refers to a file format for the compression of images. JPEG files are lossy compressed, that is to say the exact colors cannot be fully reproduced. This loss of precision is usually invisible to the human eye. The JPEG format is used widely on the Internet.

**Magneto-Optical (MO)**

A type of optical technology that uses a laser beam to read from and write to a magnetic layer on a disk.

**Magneto-Optical (MO) disk**

A type of disk that uses the Magneto-Optical technology. MO disks can be write-once-read-many (WORM) or rewriteable.

**main toolbar**

A collection of icons that represent features of McKesson Radiology Station™.

**McKesson Enterprise Image Repository™ Media Manager**

An archive management application for maintaining archive devices and managing archive media.

**McKesson Radiology™**

A DICOM compliant software program used to capture, store, transfer, retrieve, and review digital images. McKesson Radiology™ consists of the following applications and modules: McKesson Radiology PACS Admin™, McKesson Radiology Study Scheduler™, McKesson Enterprise Image Repository Route Manager™, McKesson Radiology QA Manager™, and McKesson Enterprise Image Repository™ Media Manager.

**McKesson Radiology™ Disc media**

When you export study images using the McKesson Radiology Station™, you specify the location the study images are copied to. This location specified is the McKesson Radiology™ Disc media. Typically it is a removable media, such as a CD, but it may also be a folder accessible from the workstation that the study images are exported from.

### **McKesson Radiology™ Disc Quick Viewer**

A portable viewer that allows you to view study images and information on a computer that does not have access to McKesson Radiology Station™. This enables you to share studies with other medical staff or to view studies at a different location, such as your home office.

It is one of the viewers provided by the McKesson Radiology™ Disc application. The other viewer is the McKesson Radiology™ Disc Advanced Viewer.

### **McKesson Radiology Station™**

A DICOM compliant software program used to view multi-modality, grayscale, cross-sectional images.

### **Medical Alerts**

Any special medical conditions that might affect general patient care and treatment decisions. Medical Alerts are part of a patient record.

### **modality**

An attribute of the equipment you use to capture images. For example, all images captured with an ultrasound system are of the Ultrasound Imaging (US) modality.

### **Multi-Planar Reconstruction (MPR)**

Multi-Planar Reconstruction (MPR) enables you to view cross-sectional series in an orthogonal plane other than the original one.

### **Needs Over-Read study**

A study preliminarily reported by a Radiology Resident. A Needs Over-Read study requires verification and sign-off from a Radiologist.

### **Optical Density (OD)**

The intensity unit for CR/DR/DX images. OD conveys the opacity of a pixel.

### **offset**

A correction made to a frame of reference.

### **OT (Other)**

A modality designation used to distinguish studies whose images were not captured by an image device. For example, an old exam whose films were scanned using a film scanner will have an OT modality.

### **patient class**

Category to which the patient belongs. It is specified in the patient records and study information. The default patient classes in McKesson Radiology™ are: Discharged, Inpatient, Outpatient, Unknown.



**patient documentation**

Documents that are related to the study and/or the associated patient. For example, text or audio reports, scanned documents, and diagrams.

**Patient ID**

Identification number assigned to the patient. The Patient ID is entered directly in McKesson Radiology™, or received from a HIS/RIS.

**patient location**

Location to which the patient is currently assigned. Typically refers to the ward where the patient is resting and sleeping.

**patient record**

The equivalent of a paper patient file. Stores all data about a patient. A patient can have one patient record only. For multi-site hospitals, a patient can have one patient record in each ID Context.

**Performed study**

A study for which images are captured by an image device. A Performed study is waiting to be examined for image quality, or reviewed by a Radiologist or Radiology Resident.

**pinned viewport**

A pinned viewport does not participate in linked scrolling.

**procedure type**

The type of procedure performed, for example, Obstetric or Kidney. Sometimes referred to as exam type.

**Radiologist**

User role for individuals who interpret images within a study to produce a diagnosis.

**radiology information system (RIS)**

Radiology information system (RIS) provides an integrated information management approach for radiology departments. RIS provides the tools that automate scheduling, patient index files, resource management, film file tracking, transcription, reporting, billing, and managing reports.

**Radiology Resident**

A Radiologist in training. User role for individuals who interpret images within a study to produce a preliminary diagnosis.

**reference studies**

Studies opened after the anchor study, for the same patient.

## **Referring Physician**

User role for individuals who refer patients. Referring Physicians may also review patient studies.

## **registration**

Points of registration are specific identified anatomical locations in a series, in order to view the exact location in multiple series.

## **report**

A record that conveys the patient information and physician's opinion about the study.

## **Reported study**

A study that is marked as Reported by an authorized user, regardless of whether a report is attached to the study, or automatically by McKesson Radiology™, when a final report is received.

## **Requesting Physician**

User role for individuals who request a new study.

## **sagittal**

A plane that runs perpendicular to the ground, dividing the body into right and left sections.

## **series**

A grouping of related images within a study. For example, images may be related spatially, in terms of the imaging technique used, or the session during which they were created.

## **shortcut**

Shortcuts enable you to perform a task quickly by eliminating the need to click an icon, select a menu option, or carry out a series of steps.

## **Source Window/Level**

Window/Level values and/or Look-Up Table (LUT) functions provided by the image device. The values are stored in the DICOM header. Up to six Source Window/Level values and LUT functions can be stored.

## **Study ID**

Identification number assigned to the study. The Study ID is entered directly in McKesson Radiology™, or received from a HIS/RIS.

## **Study List**

A list of studies. The Study List lists studies and displays information about the studies and the patients associated with them.

**study presentation**

A collection of visual attributes associated with images. When a presentation is applied, the images are displayed with these visual attributes.

**study status**

The standing of a study in the McKesson Radiology™ workflow. There are eight study statuses in McKesson Radiology™. A study status will change as the study progresses through the workflow.

**Study toolbar**

The Study toolbar enables you to set the screen layout and navigate studies.

**Technologist**

User role for individuals who capture images for new studies. They may also write preliminary reports and make initial image modifications.

**text overlay**

One of the layers that can be displayed on an image, or hidden. Text overlay displays details about an image, and the study and patient to which the image belongs.

**Thumbnail toolbar**

The thumbnail toolbar provides an overview of each open study. It contains a collection of thumbnails. Each thumbnail represents a series.

**Ultrasound Imaging (US)**

This modality is also called Ultrasound Scanning or Sonography. Obstetric medicine relies heavily on Ultrasound Scanning to provide images of the fetus and uterus.

**viewport**

A viewing panel where images in a series are displayed and manipulated.

**voice clip**

An audio message that is created using McKesson Radiology™ Voice Clips. Voice clips are attached to studies and can be accessed.

**Window/Level**

Image processing term. Parameters that are used to adjust the brightness and contrast of an image. They define how the captured image intensities will be displayed on the computer monitor. Level controls the brightness of the image and Window controls the contrast. All image points with intensities outside of the range that is defined by Window/Level will be displayed black, if they are too dark, or white, if they are too bright.

**Window/Level preset**

Predefined Window/Level values and the applied LUT function for a specific modality/intensity unit. Window/Level preset can be used to quickly apply the optimal presentation settings for a particular modality and body region.

**Windows Media® Player**

Used to view exported cine clips. The Windows Media® Player can be downloaded for free from the Microsoft web site.

**work group**

The medical facility or department with which a study is associated.

**X-Ray Angiography (XA)**

A radiological imaging modality that creates digital images (called angiograms) of the blood vessels. It is used to diagnose blockages and other blood vessel problems.

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