

iConnect Access Help Guide

Enterprise Study Viewer

The Enterprise study viewer window consists of the following components:



Comparing Related Studies

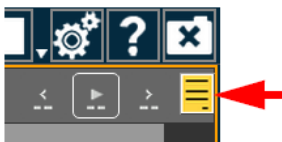
Related studies enable you to compare the original study with one or more additional studies. When opening a related study in the Enterprise viewer, each study is displayed in separate panel with its own thumbnails and demographic information. Up to three viewer panels can be open at one time in the Enterprise viewer. Each can be closed individually, except for the primary study (the one that was originally selected from the study list).

To select and load another study

From the Related Studies list, double-click a study. The application loads the study images into a new viewer panel.

To access a study report

- 1 Select and load a study (see [Selecting and Loading Studies on page 25](#)).
- 2 Do one of the following:
 - Open the Patient History tab, select a study, and click **Report** to display the report in the Report viewer.
 - Open the study in the viewer and click the Report button.



NOTE: The Report buttons are only enabled when a there is report available.


NOTE: To return to viewing the patient's images in the viewer, close the Patient History tab.

Enterprise Viewer Review Toolbar

The Review toolbar contains tools that you can use to investigate and manipulate images in the image viewer.



All-In-One Tool

	Enables the All-In-One tool. See
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Using the All-In-One Tool/Mouse Configuration



The All-In-One tool and Mouse Configuration options enable you to assign specific functions to the right and left mouse buttons and to the mouse wheel, as well as button combinations in the Universal viewer. If you have a five-button mouse, you can also assign the fourth and fifth buttons for use in the Universal viewer. The functions are available when the cursor is positioned over images displayed in the viewports.

The All-In-One tool is enabled by default in the Enterprise viewer. The tool can be disabled by clicking any other button in the Review toolbar. If the tool has been disabled, it can be enabled by clicking All-In-One in the Review toolbar:





Window Options


	Window Level. Enables you to manually adjust the window width and level. Width can be wide (many grays, less contrast) or narrow (fewer grays, more contrast). Level can be high (dark) or low (bright).
	Auto Window Level. Applies optimum window width and level values based on a histogram analysis of the active image.
	Invert. Calibrates the image grayscale to provide a negative image display. Click again to return to the original setting. For MG images, this feature only inverts the breast tissue; the background remains black.
	Reset. Resets the image display parameters (such as window settings, zoom, pan, orientation and grayscale inversion) to the last saved settings or, if you have not saved the settings during the current session, resets the parameters to the settings applied when the study was first loaded. When you reset the image display parameters, depending on the scope set for the viewer, the application resets the current image or all the images in the series.

	Full Screen. Full screen mode offers more screen real estate by hiding the menu bar and toolbar from the viewer.
	Close. Closes the viewer and returns to the study list.

Zoom


	Interactive Zoom. Zooms the selected image. In the viewport, click and hold the left mouse button, and move the cursor up/down to zoom in/out on the center of the image.
	<p>Magnifier. Magnifies an area of an image. You can move the magnification window to different locations within the viewport.</p> <p>Move the magnifier window to magnify areas of interest. Left-click within the magnification window to dismiss the window.</p> <p>To change the magnification level, you can either disable the tool and select a different magnification factor, or scroll the mouse wheel while in the magnifier.</p>









Pan

	Pan. Repositions the image within the viewport.
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Measurement Tools

NOTE: The application does not allow measurement tools on an ultrasound study that contains multiple measurement regions or when there is a single measurement region in which the measurement is other than distance.










	<p>Line Measurement. The application displays the distance between the starting point and ending point in millimeters when the image is calibrated. When not calibrated, it displays in pixels (px). The behavior of this tool can be configured in three ways in the IBM iConnect Access Service Tool. To change the behavior, contact your System Administrator.</p> <ul style="list-style-type: none"> • By default, the line measurement tool requires you to click on the image to identify the start of the line, and click again to identify the end of the line. • If the Use Alternate Drawing option is enabled in the Service Tool, after the line is drawn, you can select and move the line and each of its endpoints. • The third behavior enables you to use the option Rubberbanding Behavior When Drawing Line Measurement. With Rubberbanding, click and hold the left mouse button to start the line. Drag the cursor to the desired location and release the button to identify the endpoint. The line appears as you move the endpoint.
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	<p>Calibration. Click two points on the image to create a line. The application displays the distance and an input field where you can enter the newly calibrated distance, in millimeters.</p>
	<p>Plumb Lines; Horizontal and Vertical. Select the desired plumb line orientation—vertical or horizontal—and click anywhere on an image to draw a plumb line across the entire image intersecting at the location of the mouse cursor.</p>
	<p>Joint Line. Measure angles for metatarsal osteotomies with the assistance of a line perpendicular to the base of the angle. Click two points on the image to create a reference line. Click a third point on the image to complete an angle. The application displays the angle measurement at the intersection. Adjustments can be made to joint lines after they have been created.</p>
	<p>Transischial Line. Used to measure leg length discrepancies for pre-operative planning of orthopedic surgeries. Click two points on the image to create a reference line. Click two more points on either side of the reference line to measure the distance between those points and the reference line. The application displays the distance between the two points and the reference line and calculates the discrepancy between the two distances.</p>
	<p>Angle. Click three points on the image. The application displays the angle's measurement.</p>
	<p>Cobb Angle. Click two points on the image to create a line. Click two more points to create the second line. The application extrapolates the point where the two lines intersect and displays the Cobb Angle.</p>
	<p>Free Draw. Click and hold the left mouse button to begin drawing nonlinear annotations on an image by moving the cursor. Release the left mouse button to end the annotation.</p>
	<p>Localizer Lines. These lines enable you compare images of different planes. The application takes one reference image, compares it with the images in the other viewers, then displays a line (if applicable) that shows where the reference image intersects with the other images.</p>


Measurements made in the Enterprise viewer can be modified as follows:

- Click and drag a handle of a measurement to move the handle's location. Calculated values, such as distance measurements, are updated dynamically.
- Click and drag a measurement or text box to move it.
- Right-click a measurement to delete it.





Text and Annotations

	Add text. Click the image where you want the text to appear. The application places a text insertion point on the image. Type the text you want to place on the image. Click outside of the text box or press Enter to complete the function.
	Edit text. Click the text and edit as desired. Click outside of the text box or press Enter to complete the action.
	Toggles the text. Click once to hide the text and again to restore the text.
	Annotation rectangle. Click and drag the mouse cursor to draw a rectangle over the desired region. When you release the mouse button, the application displays the region of interest (ROI) measurements. *
	Annotation Ellipse. Click and drag the mouse cursor to draw an ellipse over the desired region. When you release the mouse button, the application displays the ROI measurements. *
	Annotation ROI. Click and drag the mouse cursor to draw a freehand ROI. When you release the mouse button, the application completes the ROI with a straight line between the start and end points. The application displays the ROI measurements. *
	Edit Annotation. When selected, enables you to modify a selected annotation in the image viewer.
	Delete Annotation. When selected, deletes a selected annotation in the image viewer.
	Delete All Annotations. When selected, deletes all annotations in the image viewer.






Pixel Value

	<p>Pixel Value. Identifies the pixel coordinates and the pixel value of a pixel when you click on an image. The pixel value is expressed as an RGB value for color images or a grayscale value (representing brightness) for monochrome images.</p> <p>For CT images, the pixel measurements are identified by the abbreviation "HU" if the pixel values are stored in Hounsfield units. An abbreviation of "US" indicates an unspecified unit of measure.</p>
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Cine and Stack

	<p>Cine. You can animate any active series using the Cine feature. Cine controls provide standard navigation commands that enable you to stop, pause, and move forward or backward through the cine. You can also adjust the speed of the cine and use the zoom, pan, and window settings while in cine mode.</p> <p>Cine starts automatically for modalities in which auto-play is configured.</p>
	<p>Stack. Produces a stack of all images in the study within a single viewport. Use the scroll bars to scroll through the images that constitute the stack. An indicator displays in the viewport to identify that the images are stacked.</p> 
	<p>Scroll Tool. Enables you to scroll through the images in a series within a viewport by moving the mouse cursor up or down while the left mouse button is pressed.</p>

Link Options

	<p>Link All.</p>
	<p>Link All Offset.</p>
	<p>Link Cancel.</p>
	<p>Link Selected.</p>
	<p>Link Selected Offset.</p>

Link All / Link All Offset

The **Link All** option links all displayed series. The system attempts to automatically align the slices based on their DICOM position and orientation attributes.

The **Link All Offset** option links all displayed series but assumes the current scroll positions represent spatially aligned images. The system maintains the same offsets as the images are scrolled.

Link Selected / Link Selected Offset

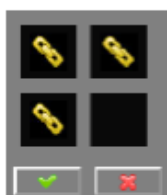
The **Link Selected** option links only the selected series. The system attempts to automatically align the slices based on their DICOM position and orientation attributes.

The **Link Selected Offset** option links only the selected series. The system assumes the current scroll positions represent spatially aligned images. The system maintains the same offsets as the images are scrolled.

When you select either of these options, the system displays a representation of the viewers currently displayed; for example:



When you click within the boxes to identify the viewers (and series) that you want to link, the system identifies the linked boxes as follows:



Click the check mark to complete the link.

Cancel

The **Cancel** option unlinks images.

Linking a Series

Perform the following to link a series.

To link a series

- 1 Select the number of viewports to compare the series
- 2 Load and display the series.
- 3 From the **Linked Scrolling** drop-down, select the appropriate link option.

NOTE: If a series is linked numerically, the images display the linked icon with the number sign beside it. If a series is linked spatially, the number sign does not appear.

To manipulate a linked series

Use the scroll bars to scroll through the stacks. The linked series scroll simultaneously according to how they are linked.

The example below displays secondary capture images using the Linked Scrolling feature (Linked All).

Linked scrolling on active viewport

Numerical linking icon



Working with Localizer Lines

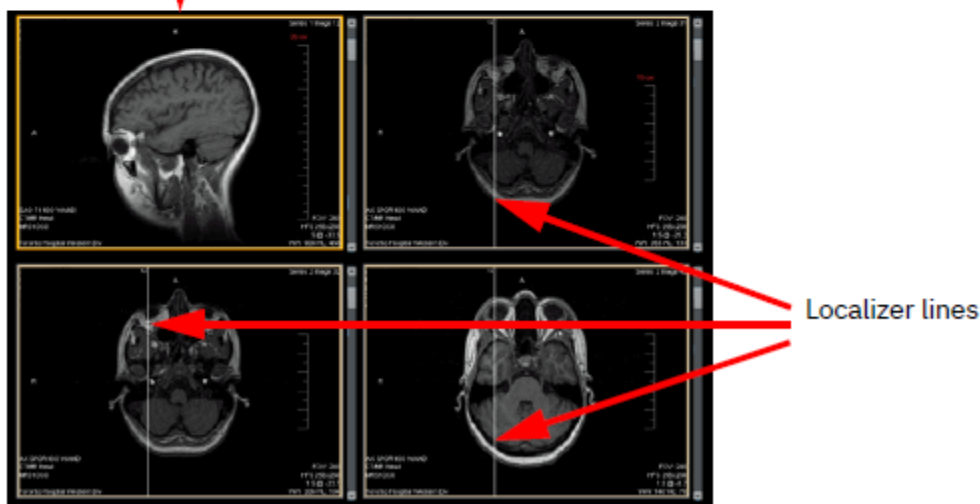
The application can display localizer lines when you compare images of different planes. The application takes one reference image, compares it with the images in the other viewports, then displays a line (if applicable) that shows where the reference image intersects with the other images.

NOTE: This feature is only available when you display multiple viewports



NOTE: After you enable the Localizer Line feature, it remains active until you disable it or when you switch from multiple viewers to a single viewer

The following example shows a viewport selected as the reference and the images in the other viewports displaying the localizer lines.

Reference image



To display localizer lines

- 1 Select your viewport setting . You must have a minimum of two viewports.
- 2 Select and load the desired images into the viewports.
- 3 If desired, select the image layout for each viewport.
- 4 Click the viewport that contains the images you want to use as a reference.
- 5 Do one of the following:
 - From the Enterprise viewer Review toolbar, click the **Localizer Lines**  tool.
 - From the Universal viewer toolbar, click the **Localizer Lines**  tool.

The images in the other viewports update to show the localizer lines indicating where the images intersect.

NOTE: If the reference image is on the same plane as the images in the other viewers, the application displays a white box around the image.

- 6 To change the reference image, click a different viewport. The images in the other viewports update to show where the images intersect.

NOTE: When you click another viewport, the series in that viewport immediately becomes the reference image even if you are only scrolling that series or applying a tool on that image/series (for example, pan, zoom, window settings).

- 7 Click **Localizer Lines** again to toggle the feature off.

Working with Calibration Lines

In the image viewport, the Calibration tool enables you to draw a calibration line and input its length in millimeters. After calibration, all existing annotations in the image are recalculated and any new annotations are calculated using the newly calibrated value. The calibration line appears as a normal line measurement afterwards.

The Calibration tool only affects the image level; therefore, it only affects one image from the image viewport. Other images in the same series are not calibrated.

NOTE: The Calibration tool is disabled on PR/KO/MR/CT/PET/NM series images.

You cannot perform calibration by editing an existing calibration line. The calibration process must be repeated to re-calibrate.

When you apply the Calibration tool to input the actual length, the new pixel spacing is recalculated according to the current pixel aspect ratio value. If neither the pixel spacing nor pixel aspect ratio exist, square pixels are assumed for calculating the new pixel spacing.



The following units of measure apply to measurement values:

- px – The measurement is displayed in pixels.
- mm cal – The pixel spacing for the measurement was calibrated by the application, either by using the provided Estimated Radiographic Magnification Factor (ERMF) or by using other correction factors provided by the modality.
- mm det – The pixel spacing for the measurement came directly from the detector/ modality and was not calibrated by the application.
- mm cal ps – The pixel spacing for the measurement was manually calibrated using the Manual Calibration Tool.
- mm unknown – The measurement value is unknown.

Depending on the type of calibration performed, one of the following indicators may also be displayed:

- FIDUCIAL – The pixel spacing values have been calibrated by the operator or image processing software by the measurement of an object (fiducial) that is visible in the pixel data and is of known size and is located close to the central ray (e.g. a catheter).
- GEOMETRY – The pixel spacing values account for assumed or known geometric magnification effects and correspond to some unspecified depth within the patient.

To display calibration lines

- 1 Click the viewport with the image you want to calibrate.
- 2 Do one of the following:
 - From the Enterprise viewer Review toolbar, click the **Calibration**  tool.
 - From the Universal viewer Toolbox, click the **Calibration**  tool.
- 3 Draw a line in the image by clicking the image to set the start point and clicking again to set the end point. A text box opens for the input value.
- 4 Change the default value by typing a new value in the text box. The unit of measure is millimeters (minimum 0, maximum 1000). Click **Enter**.

All annotations in this image are recalculated and updated according to the new value. The calibration line remains but is no longer highlighted.