Imaging Viewing Solution App

User Manual

U.S. Department of Veterans Affairs
Veterans Health Administration
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User Manual

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Overview

The Imaging Viewing Solution (IVS) mobile application (app) allows U.S. Department of Veterans Affairs (VA) clinicians and other relevant staff to search for and view patients' x-rays and radiology images. The app aggregates images from all VA medical facilities, offering easily accessible diagnostic-grade images, capabilities to work with images (e.g., zooming, rotating, changing viewpoints, measuring) and a tool to collaborate with other VA and non-VA clinical staff.

The app protects Personally Identifiable Information (PII) and Protected Health Information (PHI) as well as the fidelity of the image, ensuring app usage is HIPPA compliant and that images cannot be manipulated. (**NOTE:** IVS should NOT be used for mammography images.)

The IVS App is available for iOS, Android and Windows operating systems, and is supported by these Internet browsers:

1. Internet Explorer 10 and higher
2. Safari 7 and higher
3. Firefox 24 and higher
4. Google Chrome 30 and higher

This user manual provides an in-depth, step-by-step guide for using the Imaging Viewing Solution App.

The Basics

Prerequisites

To use the IVS App, you must be a VA health care professional with credentials for the Veterans Health Information Systems and Technology Architecture (VistA).

Logging In

To access the Imaging Viewing Solution (IVS) App > Click **Login** > Enter your VistA Username > Enter your VistA Password > Begin typing in a VA Hospital Location > A list of matching facilities will appear in a drop-down menu > Click your VA facility > Click **Sign In**. **NOTE:** When using IVS via a remote connection, check that secure transmissions are enabled in order to protect private patient information. This can be facilitated via a Virtual Private Network (VPN) connection to a corporate network or Secure Sockets Layer (SSL) directly into the ResolutionMD web server.

Getting to know the screen

When you log in to the IVS App, you will see the Study Browser screen, which is where you can search for patients and select images you would like to view. The screen is split into two panes: patient information on the left and an image preview area on the right. You can drag the vertical black bar separating the two panes to change the size of the panes. There are also a few buttons and icons that help you navigate the app:

Study Browser – where you can search for patients and select images you would like to view

- Viewer – where you can see and work with the images you found in the Study Browser
- Question mark – a built-in User Guide for the app
- Person icon – where you can collaborate with other health care professionals
- Logout – exiting the app

Learning about the IVS App

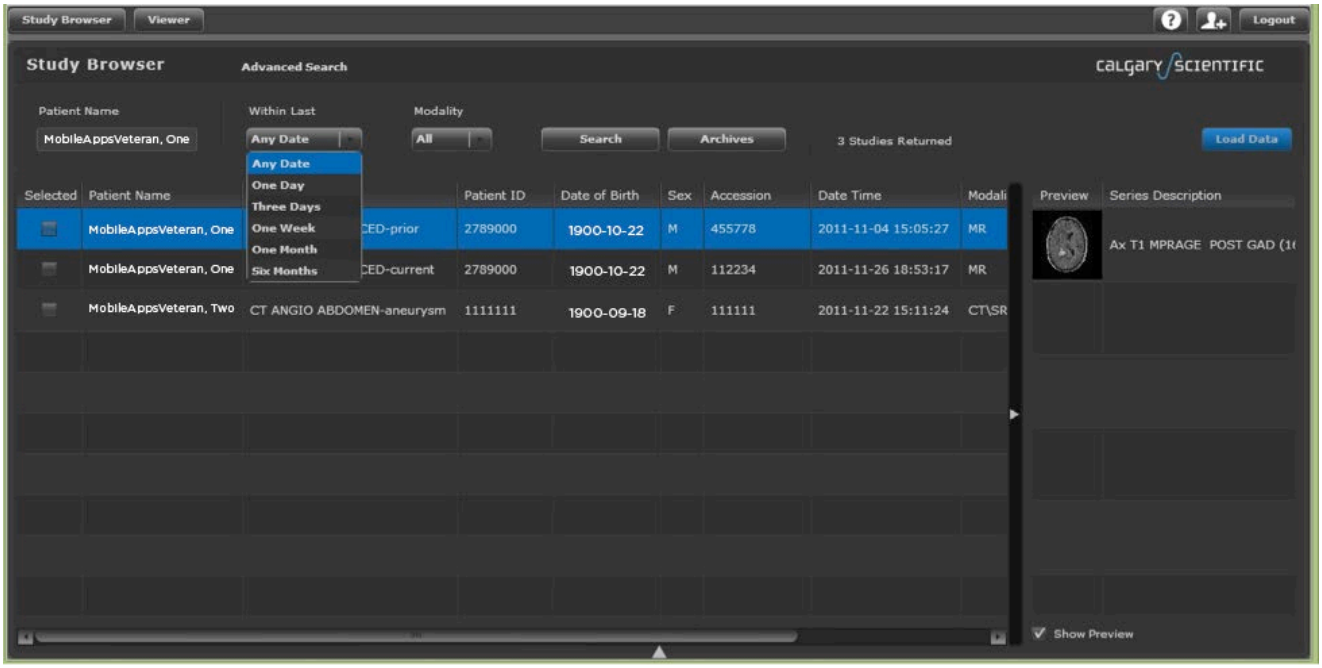
Click the User Guide button with the question mark icon in the upper right corner of your screen > A User Guide will open in another window > The User Guide is divided into two panes: a table of contents on the left and information about the app on the right > Click a category within the table of contents on the left, and the background and instructions for the topic will appear on the right side of the screen.

Logging out

Click **Logout** in the upper right corner.

Patient Search

Find a patient with either a simple or an advanced search. You can search specific archives or all of VA's databases.



Using the simple search

When you log in to the IVS, the search will default to Simple Search options. Fill out any or all of the criteria:

- **Patient Name** – Type the patient's full name or full social security number (SSN), last name in full or in part, or the first letter of his or her last name and the last four digits of his or her SSN.
- **Within Last** – Click the bar under the "Within Last" heading > A drop-down menu will appear with date options > Click either **Any Date, One Day, Three Days, One Week, One Month** or **Six Months.**
- **Modality** – Click the bar under the "Modality" heading > A drop-down menu will appear with modality options > Click All or a specific modality.

Click **Search** > A list appears of patients whose information matches your search criteria.

Using the advanced search

When you log in to IVS, the search will default to Simple Search options. Click **Advanced Search** to find patients using additional search fields, and fill out any or all of the criteria:

- **Patient Name** –Type the patient's full name or full social security number (SSN), last name in full or in part, or the first letter of his or her last name and the last four digits of his or her SSN.
- **Patient ID** – Type the number assigned to your patient. (**NOTE**: If you only know part of a patient ID number, use asterisks before and/or after the partial number to indicate there are missing digits. This may result in a match to more than one patient.)
- **Accession** – Type the number assigned to the images when they were entered into the VA database. (**NOTE**: If you only know part of an accession number, use asterisks before and/or after the partial number to indicate there are missing digits. This may result in a match to more than one patient.)
- **Study Description** – Enter the type of image your patient had taken. (**NOTE:** The best way to enter a study description is to use asterisks before and after the search term. This allows for all mentions of a word to be captured in your search.)
- **Referring Physician** – Type the last name, last and first name or part of the last name of the physician who referred the patient to you.
- **Within Last** – Click the bar under the "Within Last" heading > A drop-down menu will appear with date options > Click either **Any Date, One Day, Three Days, One Week, One Month** or **Six Months.** (**NOTE:** If you use the Within Last search option, you cannot use the Date Range search option.)
- **Date Range** – The top date indicates the date from which you would like to start your search, and the bottom date indicates the date at which you would like to end your search. Click each calendar icon > A pop-up calendar will appear > Click days on the calendar to choose start and end dates of the time frame. (**NOTE:** If you use the Date Range search option, you cannot use the Within Last search option.)
- **Modalities** – Click the circle next to either All Modalities or the specific modality you would like to search:

Keystroke	Action
CR	Computed Radiography
CT	Computed or Computerized Tomography
DX	Digital Radiography
ES	Endoscopy
KO	Key Object
MG	Mammography
MR	Magnetic Resonance
NM	Nuclear Medicine
OP	Ophthalmic Photography
OT	Other
PT	Positron Emission Tomography (PET)
RF	Radio Fluoroscopy
SC	Secondary Capture
US	Ultrasound
XA	X-Ray Angiography

- **Archives** – Click **Archives** > An Archive Selection pop-up menu will appear with a list of available archives you can search > Certain archives will be auto-selected > Click the checkbox(es) next to the archives you would like to search if they are not already selected > Click the **X** in the upper right corner to close the pop-up menu.

Click **Search** > A list will appear of patients whose information matches your search criteria. To clear the search fields and begin a new search, click **Reset Query**.

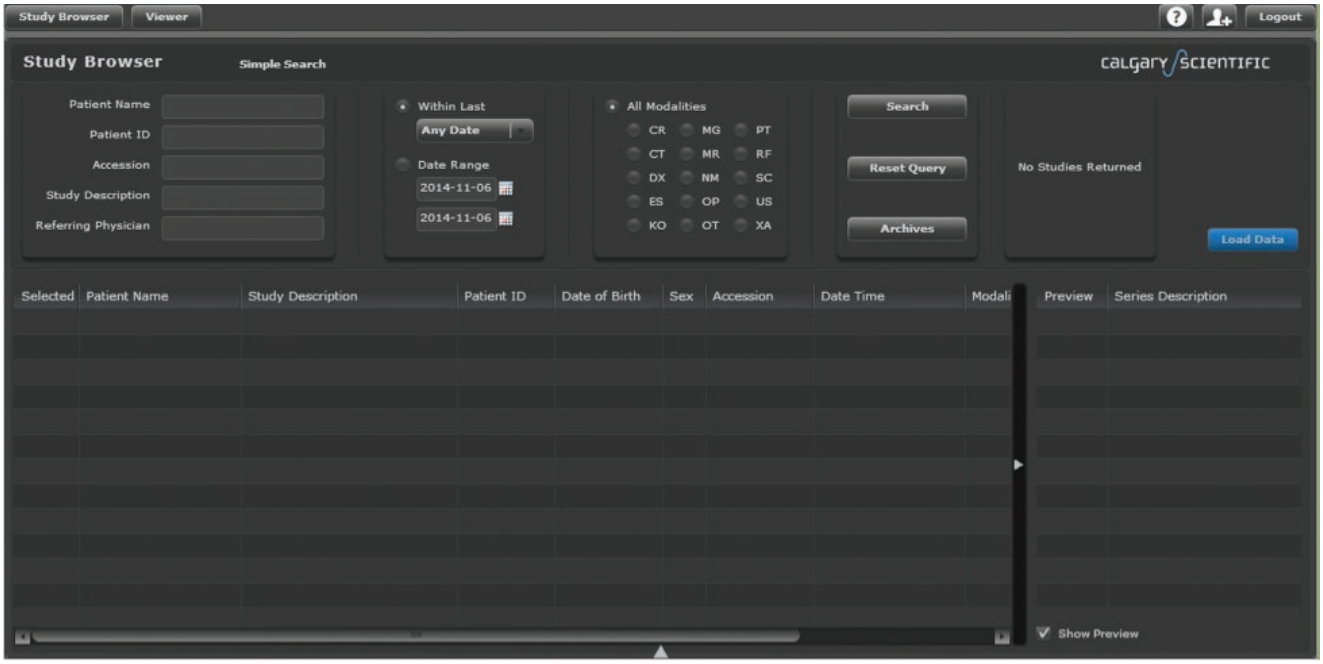
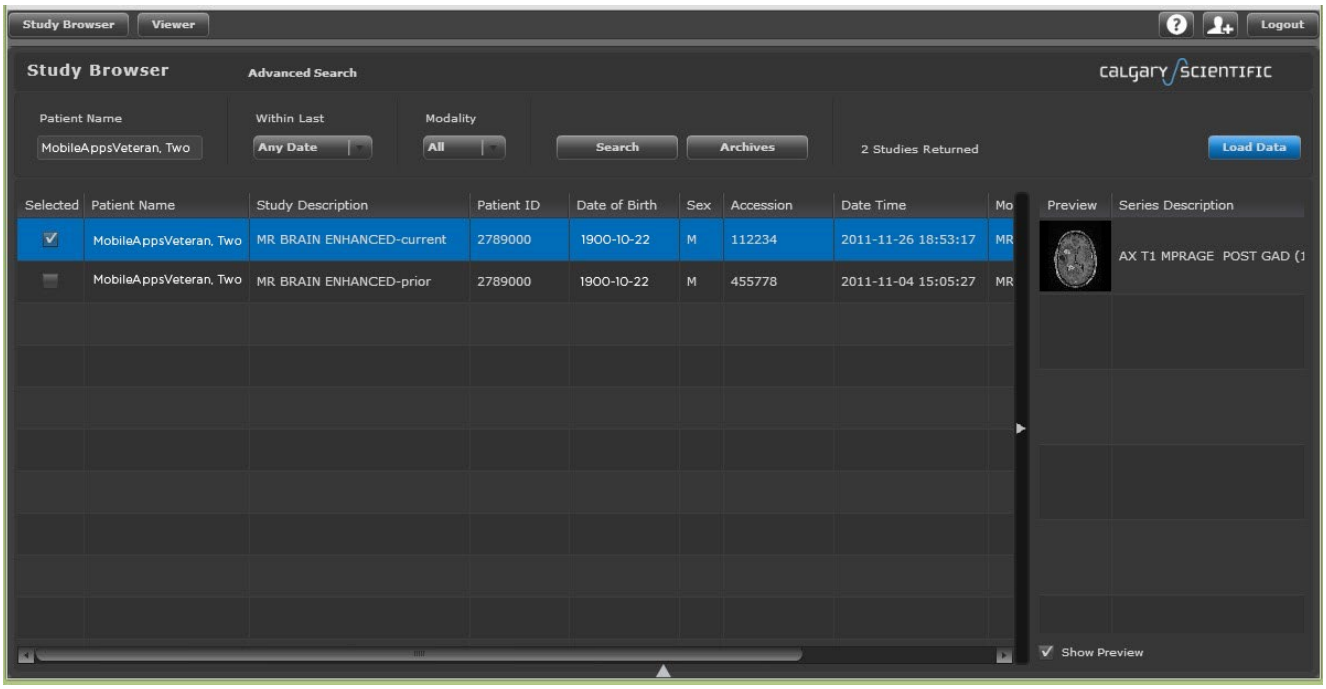


Image Viewing

You can view a patient's images from different perspectives (2D, MIP/MPR or 3D) as well as work with images in a variety of ways, such as zooming, flipping, highlighting and making notes on an image.



Choosing images to view

After you have searched for a patient in the Study Browser, a list of patients whose information matches your search criteria will appear in the left pane in a list that shows:

- Patient Name
- Study Description
- Patient ID
- Date of Birth
- Sex
- Accession
- Date Time
- Modality
- Archive

If you cannot see all of the columns, either use the scroll bar at the bottom of the screen or move the vertical black bar that separates the list of patients from the preview pane. When you click on a patient, the details of his or her image will appear in the Series Description pane (right side of the screen). If the box is checked next to "Show Preview" at the bottom right of the screen, you will see a small photo of the patient's image. To add the image to the Viewer where you can work with the image in detail, click the checkbox in the Selected column of the image(s) you would like to view or double-click the image you would like to view > Click Load Data in the upper right corner of the screen (or double click on the **Preview/Series Description**) > You will go to the Viewer screen, which shows you the full-size images and provides you with different ways to view them.

Viewing a patient's images

After you have loaded images into the Viewer, the patient's data will be divided into two panes: the written details on the left side of the screen, and the image(s) on the right side of the screen. By clicking on the buttons on the bottom left of the screen, you can change the way the images are presented:

- Toggle GSPS (Greyscale Softcopy Presentation State) Data (circle-arrow-square icon) - removes any overlay (arrows, annotations, call-outs, etc.) that may obscure the view of the anatomy in a DICOM image that has had additional graphics applied, allowing you to see the original, unretouched image.
- Link Views (chain icon) – in 2D mode, you can scroll through images by moving the wheel of your mouse, and you may view up to four images at one time. If you are viewing two or more images at one time, you can link your views together so that when you scroll through one image, the other images scroll simultaneously. Or you can unlink your views so that if you scroll through one image, the others remain fixed.
- 1x1 Layout (box icon) – one image
- 1x2 Layout (vertical rectangles icon) – two images side by side
- 2x1 Layout (horizontal rectangles icon) – two images stacked top and bottom
- 2x2 Layout (four squares icon) – four images in a square

Related Studies (person with three dots icon) – If your patient has had multiple sets of images taken of the same type (e.g., cranial, spine, etc.) the Related Series button will provide you with all of your patient's available images in the database, regardless of the initial search criteria used to view the current study.

Reading and changing orientations

Throughout the various ways of viewing an image, there will be markings and directions to signify the orientation of the image:

Keystroke	Action
A	Anterior (front)
P	Posterior (back)
R	Right lateral
L	Left lateral
S	Superior (above)
I	Inferior (below)

These markings will generally be along the sides of the image or next to a 3D compass in the bottom left of an image. If you would like to change the orientation of the image, click on the ends of the compass and swivel it, which will consequently rotate the image.

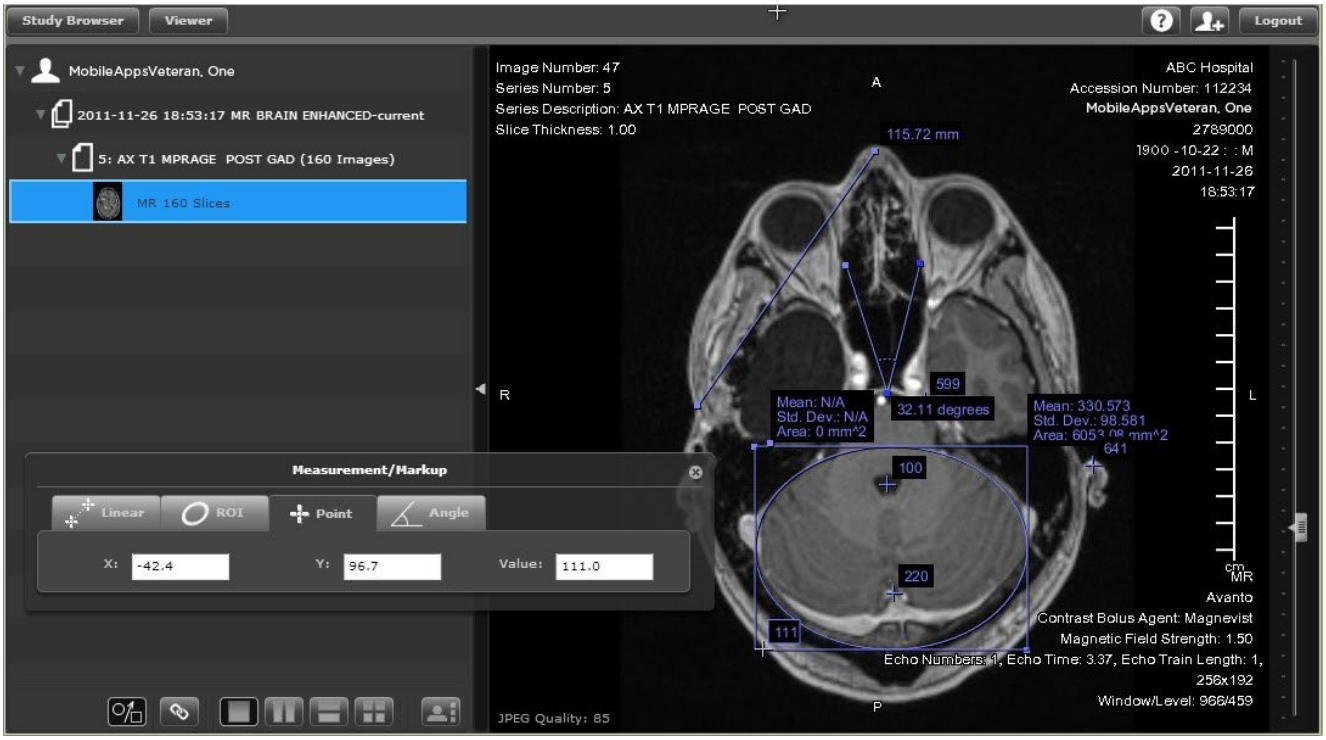
Controlling the image with the menu

After you have selected an image, right click on the image, and a circular pop-up (radial) menu will appear, which gives you options for viewing an image in different ways and making notes. **NOTE:** Not all menu options are available for every image.

- Flip/Rotate (triangle-line-arrow icon) – An Image Reorientation pop-up box will appear > Click either **Mirror Vert., Mirror Horz., Rotate CW** (clockwise) or **Rotate CCW** (counterclockwise).
- Layout (three square and rectangle icon) – The wedges of the radial menu will change > Click either **2D (2x2), 2D (2x1), 2D (1x2), 2D, MIP/MRP** or **3D.**
- Markup ("A" icon) – A Measurement/Markup pop-up box will appear with two options: Annotate and Freehand. By clicking **Annotate**, a cursor will appear that you can place in the desired location on the image and type your note. By clicking **Freehand**, a pencil will appear that allows you to draw or write. **NOTE**: Freehand is not available in 3D view. To delete a markup or annotation, click on the item you would like to delete, and press the **Delete** key.
- Options (checkbox icon) – An Options pop-up box will appear > Click the checkbox next to "Show Status Bar" to see the bandwidth, frame rate and .jpeg quality of an image and/or "Display Meta-Data" to see the details of an image such as image number, series number, slice thickness and patient information. You can also click **User Guide**, **Hotkeys** (keyboard shortcuts and controls for IVS) and **About** to open a new tab that explains each topic.
- Presets (graph icon; Presets allow you to choose and view certain elements or materials within an image, such as soft tissue or blood) – For 2D images, a Window/Level Presets pop-up box will appear (For 3D images, a Material Editor box will appear) > Click the **Select a preset** bar, and a drop-down menu of presets will appear > Click the preset you would like to use > The width and level will adjust accordingly. (**NOTE**: For 3D images, more preset options are available. See the 3D Image section for detailed instructions.)

- Measure (ruler icon) – A Measurement/Markup pop-up box will appear > Click:
  - **Linear** > Your cursor will change to a + > Click on the image where you would like to start drawing a line > Hold down and drag your cursor to where you would like to end your line > Release your mouse, and the distance between the two points will be calculated both next to the line and in the measurement box. You can adjust the line by clicking on an end point and dragging it to a new location.
  - **ROI** (Region of Interest) > Your cursor will change to a + > Click on the image near the region you would like to measure > Hold down and drag your cursor, and a box with an oval inside will appear > Release your cursor when the box and circle has covered the region you would like to measure > The measurements for Area, Mean and SD (standard deviation) will be calculated both next to your drawn box and in the measurement box. You can adjust the box by clicking on the corners and dragging it to a new location.
  - **Point** > Your cursor will change to a + > Click on the image at the point you would like to measure > The X axis, Y axis and Value (in Hounsfield Units) will calculate both next to the point and in the measurement box. You can move the point by clicking on it and dragging it to a new location.
  - **Angle** > Your cursor will change to a + > Click on the image where you would like to measure the angle > Click on the points at the vertex and the arms of the angle, and drag until the angle faces and covers the region you would like to measure > The degree will be calculated both next to the angle's vertex and in the measurement box.
  - **Volume** (**NOTE:** This option is only available in 3D view. See the 3D Image section for detailed instructions.)
- Cine (triangle icon; Cine allows you to automate scrolling through or "play" a reel of images) – A Cine pop-up box will appear > Click the forward, backward or stop buttons to control the automatic play of images. (**NOTE:** This option is not available in 3D view.)

To close the pop-up boxes, click the **X** in the upper right corner. To close the menu, left click in the center of the circle or anywhere outside of the radial menu.



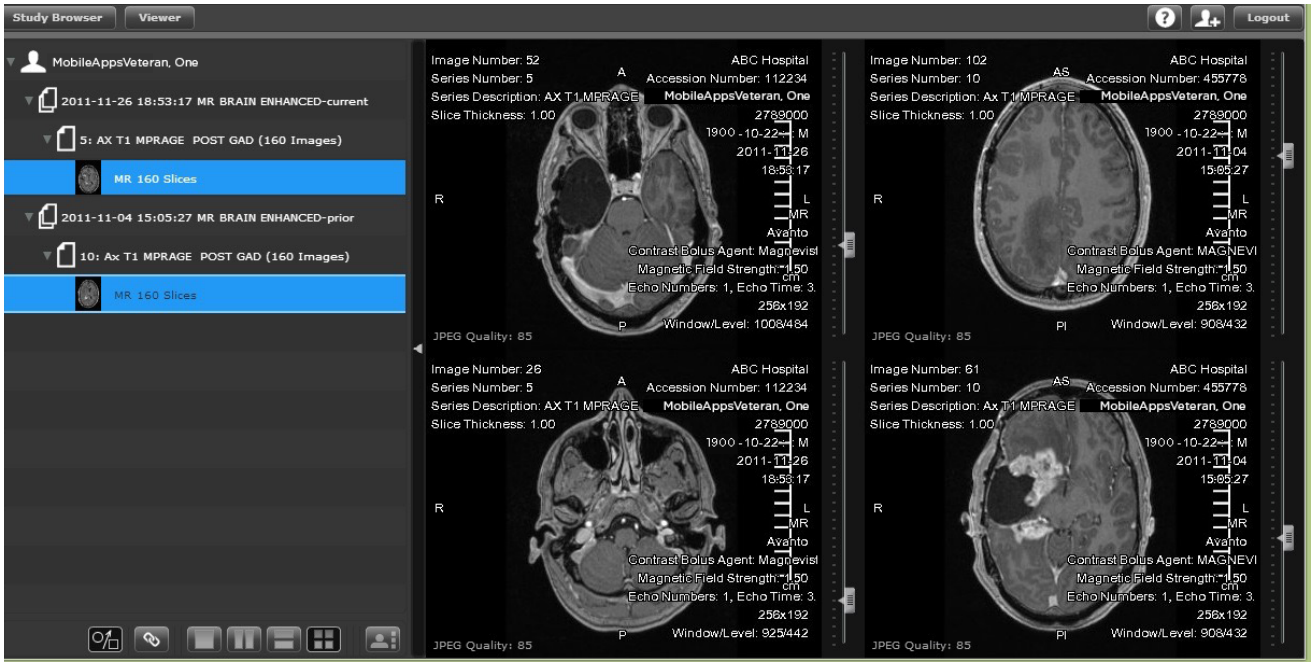
Using keyboard controls throughout the app

There are keystrokes you can use that allow you to interact with any image, no matter the view:

Keystroke	Action
HOME	Reset view
-	Zoom out
= or +	Zoom in
DELETE	Remove a markup or selected area
v	Reset size of window/level
Right-click and drag up or down	Adjust the window/level

2D Images

The 2D view allows you to see and interact with up to four images at one time.



Changing to 2D view

When you load images into the Viewer, the view will default to 2D. However, if you have switched to a different view, right click on the image to display the radial menu > Click **Layout** > Click one of the 2D layout options: **2D (2x2), 2D (2x1), 2D (1x2) or 2D** (one image). If you choose to view more than one image simultaneously, left click on the series of images on the left side of your screen, and drag it into the open spaces in the 1x2, 2x1 or 2x2 layout on the right side of your screen.

Working with 2D images

There are a few ways you can work with a 2D image:

- Scrolling through slices – Either use the wheel on your mouse or drag the scroll bar to the right of the image. (To see directions for scrolling on an iPad or other iOS device, visit ***appendix #3***.)
- Zooming in – Either (1) press the **=** key, (2) hold the **Alt** key, and scroll up with your mouse wheel or (3) hold **Ctrl-Shift** while clicking and holding down the left side of your mouse, then drag your cursor up. (On a Mac, hold **Cmd** instead of Ctrl; To see directions for zooming on an iPad or other iOS device, visit ***appendix #3***.)
- Zooming out – Either (1) press the **–** key, (2) hold the **Alt** key, and scroll down with your mouse wheel or (3) hold **Ctrl-Shift** while clicking and holding down the left side of your mouse, then drag your cursor up. (On a Mac, hold **Cmd** instead of Ctrl; To see directions for zooming on an iPad or other iOS device, visit ***appendix #3***.)
- Flipping or rotating an image – Right click on your mouse to display radial menu > Click **Flip/Rotate**. **NOTE:** The flipping/rotating action is not available on iPads or other iOS devices.

- Magnify part of an image – Press the letter **O** key > A box-shaped lens will appear, which magnifies the area it covers > Click on the box, and drag it over the area you would like to magnify. To close the magnifying glass, press the letter **O** key again. **NOTE:** The magnifying action is available on iPads or other iOS devices in the 3D Lens mode only.

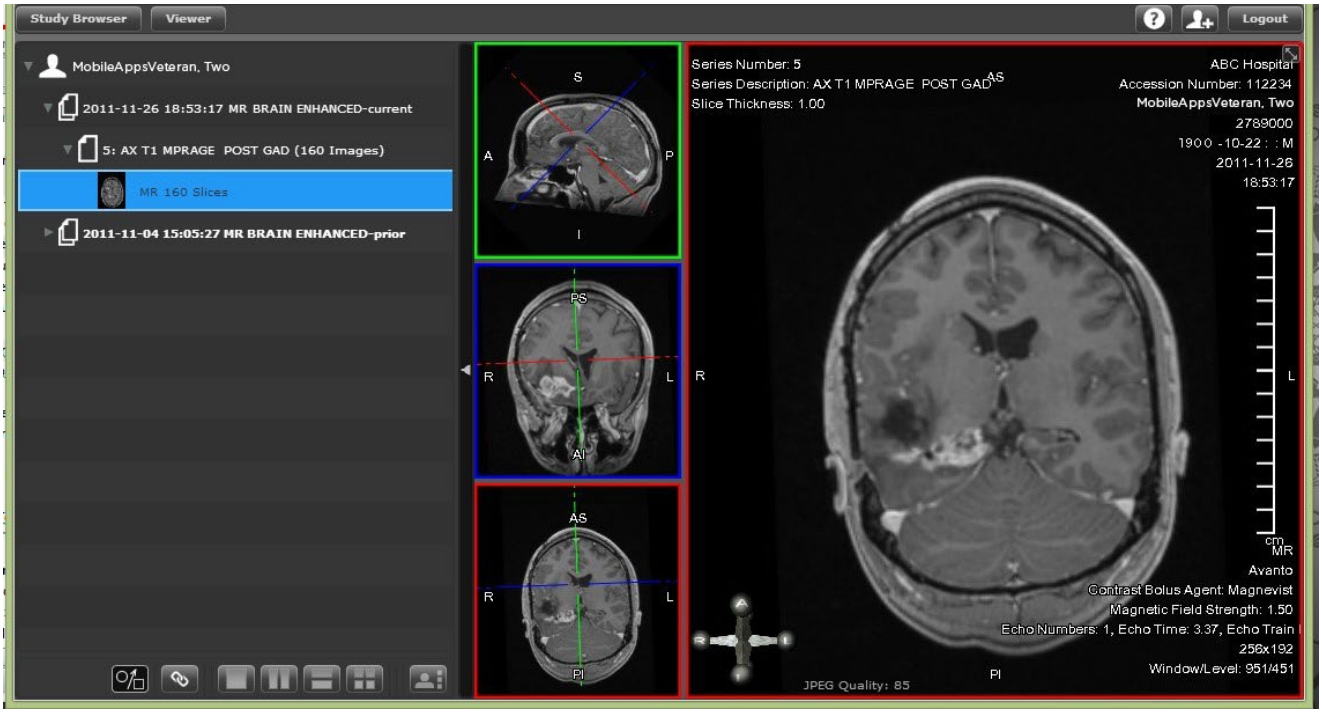
Using keyboard controls for 2D images

There are keystrokes you can use that allow you to interact with a 2D image:

Keystroke	Action
D	reset pan
S	reset view to its default slice
1 – 0	window/level presets
Alt + click + drag	autoscroll through slices
I	invert intensities (change light to dark and dark to light)
O	turn magnifying glass on or off

MIP/MPR Images

The MIP/MPR (maximum-intensity projection/multiplanar reconstruction) view allows you to see and interact with cross sections of 2D images.



Changing to MIP/MPR view

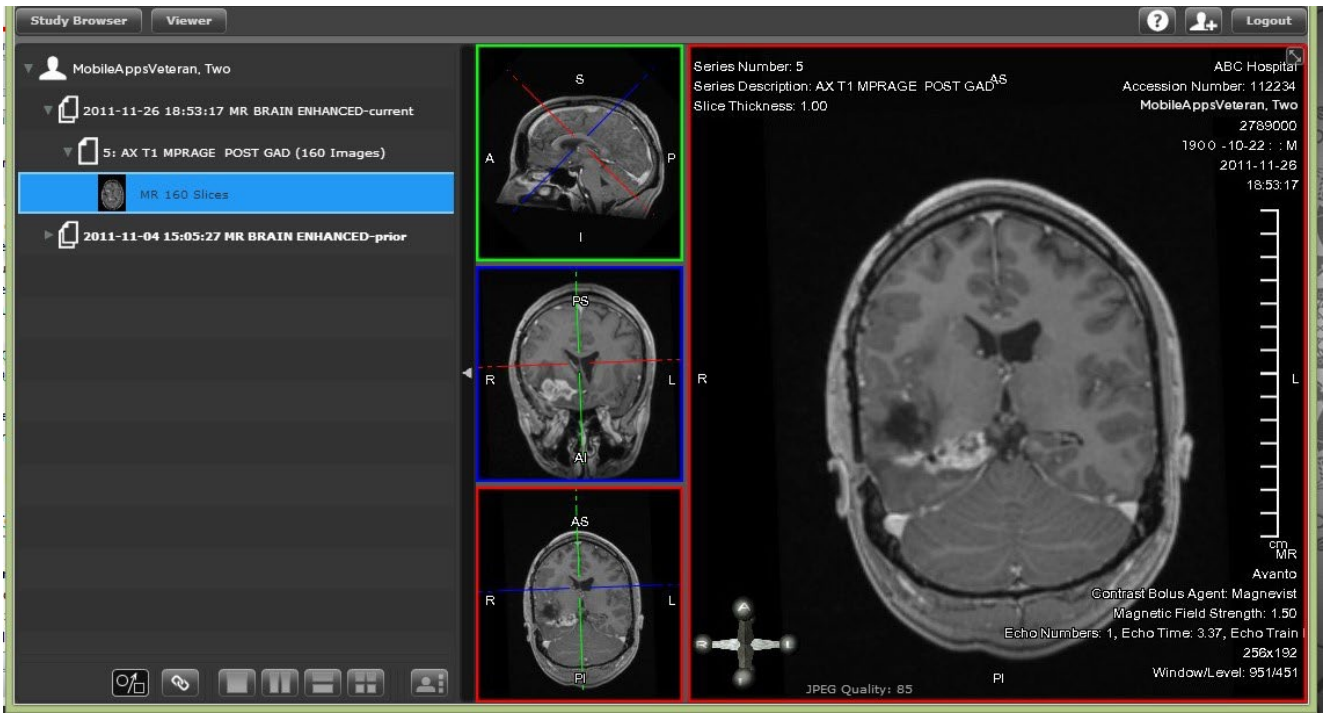
When you load images into the Viewer, the view will default to 2D. To change the view, right click on the image to display the radial menu > Click **Layout** > Click **MIP/MPR**.

Getting to know the MIP/MPR view

The MIP/MPR screen is divided into four images: three small images in a vertical strip on the left, and one large image on the right. The small images on the left show three perspectives and are color coded:

- Green - slices taken from left to right (sagittal)
- Blue - slices taken from front to back (coronal)
- Red - slices taken from top to bottom (axial)

The larger image will be a close-up of one of the smaller images. Clicking on a small image will change the image in the big window for viewing. To emphasize from which perspective the larger image is being viewed, the larger image outline will match the color (green, blue or red) of the small image it duplicates. Any changes or mark-ups made to one image will be reflected in the other images of the series being viewed. You can change the size of the smaller images by clicking on and dragging the horizontal lines between the images.



Working with` MIP/MPR images

There are a few ways you can work with an MIP/MRP image:

- Scrolling through slices – Either use the wheel on your mouse or drag the scroll bar to the right of the image. (To see directions for scrolling on an iPad or other iOS device, visit ***appendix #3***.)
- Zooming in – Either (1) press the **=** key, (2) hold the **Alt** key, and scroll up with your mouse wheel or (3) hold **Ctrl-Shift** while clicking and holding down the left side of your mouse, then drag your cursor up. (On a Mac, hold **Cmd** instead of Ctrl; To see directions for zooming on an iPad or other iOS device, visit ***appendix #3***.)
- Zooming out – Either (1) press the **–** key, (2) hold the **Alt** key, and scroll down with your mouse wheel or (3) hold **Ctrl-Shift** while clicking and holding down the left side of your mouse, then drag your cursor up. (On a Mac, hold **Cmd** instead of Ctrl; To see directions for zooming on an iPad or other iOS device, visit ***appendix #3***.)
- Flipping or rotating an image – Right click on your mouse to display the radial menu > Click **Flip/Rotate**. **NOTE:** The flipping/rotating action is not available on iPads or other iOS devices.

Manipulating planes

In each of the small images on the left, there are two perpendicular positional lines that represent the cross sections or slices you are viewing. You can move lines to view the image from different perspectives. To change the view, you can:

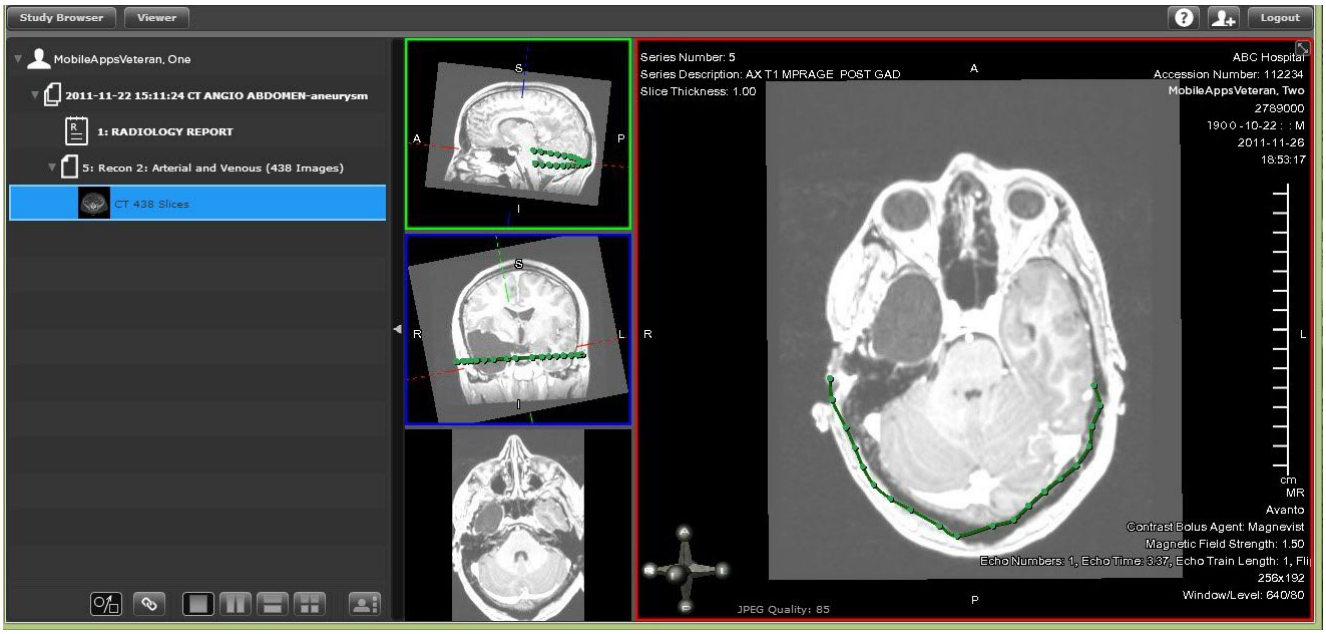
- Move a plane perpendicularly or in parallel orthogonally – Click on any solid part of the perpendicular positional lines over the image > Hold down and drag up, down, right or left to reposition. **NOTE:** It is not possible to move a plane on an iPad or other iOS device. The Orthogonal Plane views are seen on iPads and other iOS devices but the lines are not available.
- Rotate a plane – Click on any dashed end of the perpendicular positional lines over the image > Hold down and drag clockwise or counterclockwise to reposition. **NOTE:** It is not possible to rotate a plane on an iPad or other iOS device.
- Re-center the positional lines – Click on the intersection of the perpendicular positional lines > Hold down and drag to reposition. **NOTE:** It is not possible to re-center positional lines on an iPad or other iOS device. The Orthogonal Plane views are seen on iPads and other iOS devices but the lines are not available.

- Triangulate a point – Hold down the **Ctrl** (or **Cmd** on a Mac), and click anywhere on any of the three smaller images in the strip view > The point will be reflected in the other two smaller images, and the large image on the right will adjust accordingly. **NOTE:** It is not possible to triangulate a point on an iPad or other iOS device.

Using curved MPR

While the MIP/MPR view is generally used to show images at right angles to each other, you can create a curved MPR (CMPR), which is a series of 2D images that follow the curvature of a specified part of anatomy. When viewed together, they present a continuous (elongated) depiction of the entire anatomical structure in a single plane. You must first enable CMPR by right clicking to display the radial menu and clicking **Manual CMPR**. Then you can:

- Draw to define a centerline – Left click your mouse and hold down > Draw a line on any of the images to designate your centerline > Points will appear on the line you have drawn, and the line will be reflected in the other three images.
- Adjust the centerline – Click any of the points on the centerline you have drawn > Hold down and drag to reposition.
- Rotate the curved MPR view – Left click your mouse after completing the curved path and hold down.
- Reset the MPR – Press the **D** key.



Measuring volume

In addition to measuring lines, regions, points and angles, you can also measure the volume of any shape in MIP/MPR view. Because MIP/MPR shows 2D cross sections or slices of 3D images, you will have to indicate at least two enclosed regions for your measurements so that the tool can calculate the volume in between the 2D cross sections. First, to go to the measurement tool, right click on the image to display the radial menu > Click **Measure** > Click the **Volume** tab > Click and hold your mouse to draw an enclosed shape > The shape's data will appear in the measurement box > Scroll to another slice in the series of your patient's images > Click and hold your mouse to draw another enclosed shape > The shape's data will appear in the measurement box > The volume in mm^3 between the two shapes will calculate in the measurement box. You can add more shapes from other slices, which will continue to adjust the total volume. For each shape, you will see:

- Slice – identifies a numbered cross-sectional plane within the series of images
- Perimeter (mm) – identifies the distance around the shape
- Area (mm^2) – identifies the total surface area of a shape

- Mean – identifies mean of the Hounsfield Units for each pixel contained within the shape
- Standard Deviation – measures the variation from the average in Hounsfield Units among the pixels contained within the shape. A low standard deviation indicates that the data points tend to be very close to the mean; a high standard deviation indicates that the data points are spread out over a large range of values.

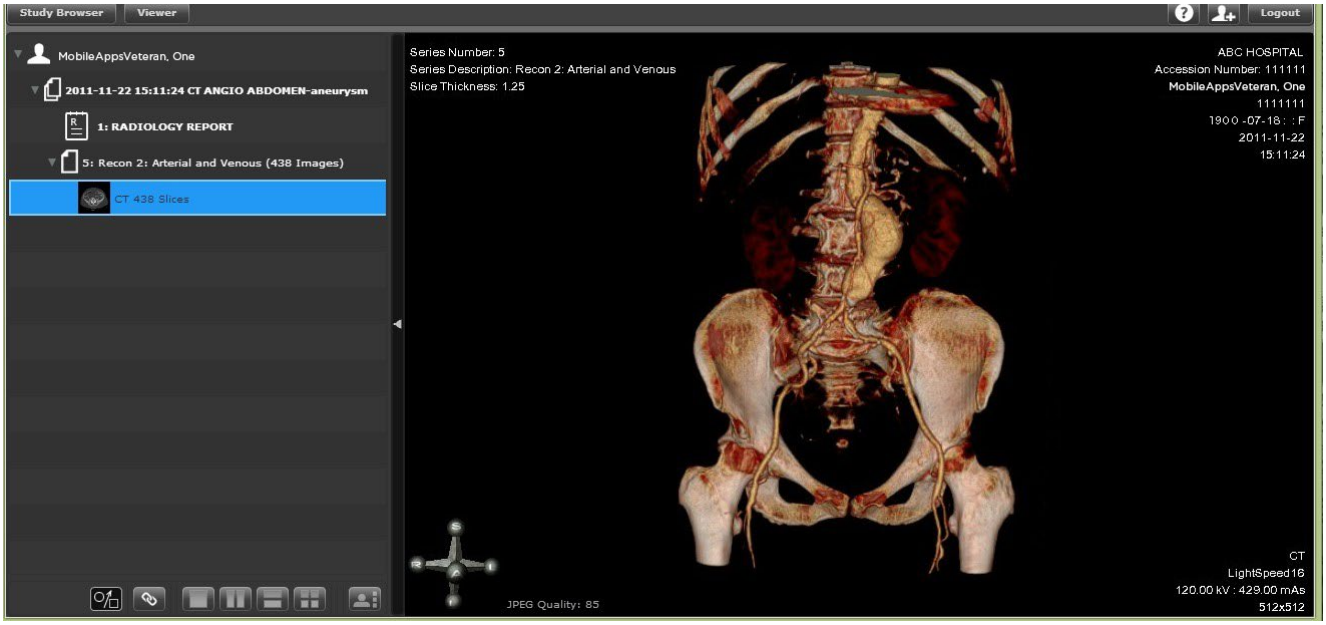
Using keyboard controls for MIP/MPR images

There are keystrokes you can use that allow you to interact with a MIP/MPR image:

Keystroke	Action
E	Turn extents/measurement ruler on or off on the Orthogonal Images on the left of the main view window
D	Reset all views
I	Invert intensities (change light to dark and dark to light)
Ctrl + click	Triangulate (Triangulation is a technique for determining if a questionable structure is genuine or a superimposition of structures.)
S	Turn slabbing on or off (Slabbing allows you to adjust the thickness of the slices or cross sections. Note that the thicker the slab, the less detail you will be able to see.)
C	Reset the view currently under the mouse cursor
Alt + click + drag	Autoscroll through slices

3D Images

The 3D view allows you to see and interact with images as they would seem in real life.



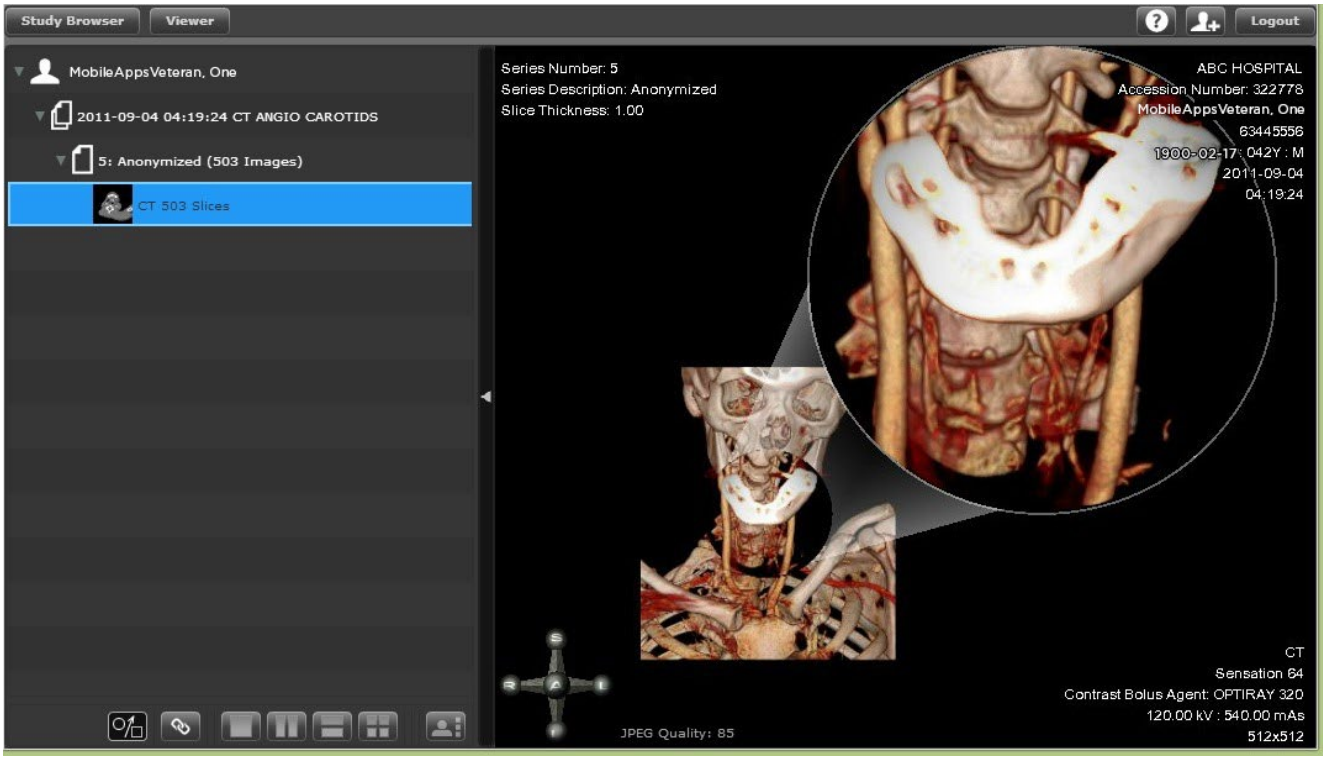
Changing to 3D view

When you load images into the Viewer, the view will default to 2D. To change the view, right click on the image to display the radial menu > Click **Layout** > Click **3D.**

Magnifying part of an image

The lens feature allows you to magnify a section of a 3D image while keeping the entire volume in the main view. Right click to display the radial menu > Click **Lens** > Click on the area you would like to magnify > The magnified area will appear in a circular lens. You can then:

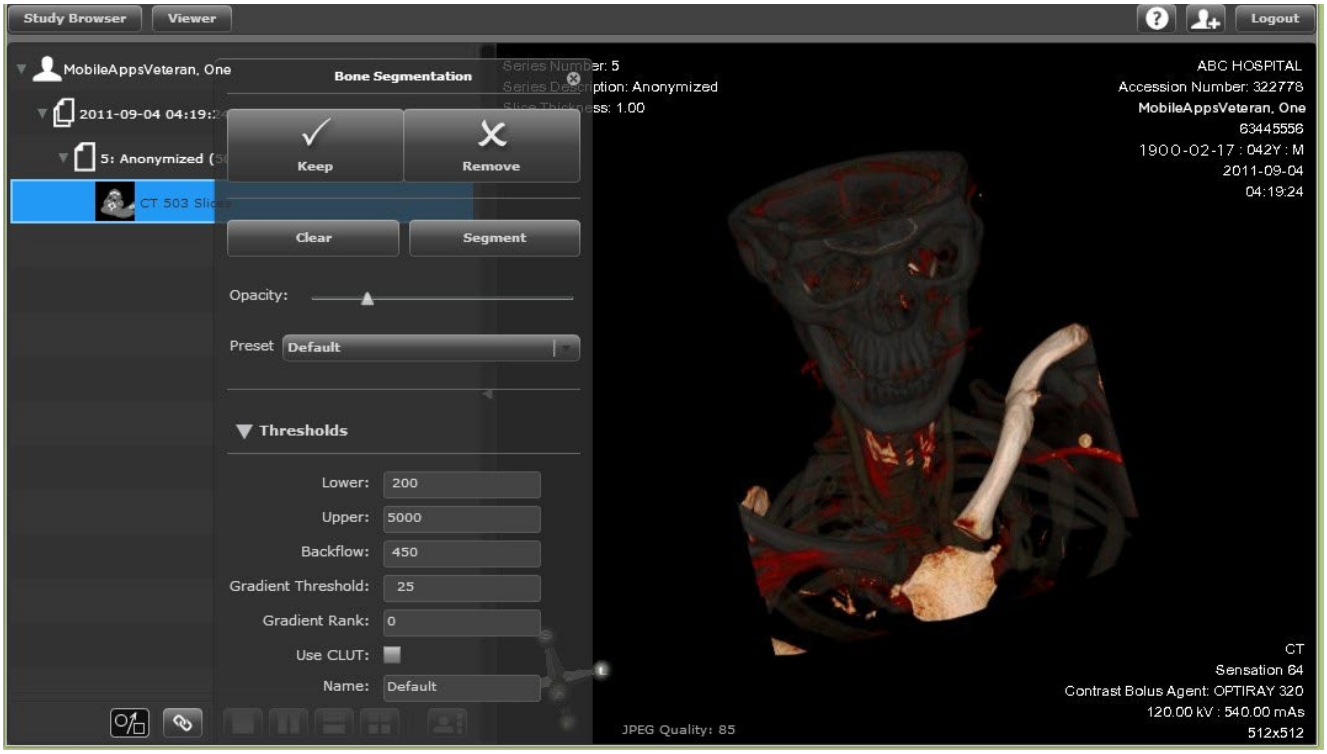
- Move the lens over the volume – Left click on the magnified area in the lens and hold down > Drag the lens to reposition.
- Adjusting the level of the len's magnification – Click on the magnified part of the image in the circular lens > Scroll the wheel of your mouse up to increase magnification, or scroll the wheel of your mouse down to decrease magnification.



Segmenting an image view

If you would like to view certain areas of an image, but other parts of the image are in your way, you can remove the material that is obscuring your view. Right click to display the radial menu > Click **Segmentation** > The options in the radial menu will change to three ways you can segment an image > Click either:

- Clipping Planes (box icon) – Clipping planes slide into the volume to cut away slices of the image. Click **Clipping Planes** > A box will appear around the image with floating dots or "handles" in the middle of the box > Click on either an edge or a corner of the box, and drag to readjust the size > Click on one of the floating dots or "handles" in the middle of the box and drag to slice away or remove planes of material. To rotate the image, click outside the box, and drag. To reset the clipping planes and image orientation, press **G**.
- Scalpel (knife/scalpel icon) – The scalpel manually cuts away obscuring anatomy, allowing for a greater degree of precision than clipping planes. Click **Scalpel** > Left click, hold and drag the scalpel around the part of the image you would like to cut away > Release your mouse > Hover your mouse over the outlined area so that it is highlighted > Press the **Delete** key > The outlined section will disappear. To undo the cuts, press **Z** while the scalpel tool is enabled.
- Bone Segmentation (bone icon) – Bone segmentation allows you to remove selected materials from the image. Click **Segmentation** > A Bone Segmentation pop-up window will appear > Click **Keep** > Click on the material(s) within the image that you would like to keep > Click **Remove** > Click on the material(s) within the image you would like to remove > Click **Segment** > The image will change based on which materials you wanted to keep and remove. Once you have segmented the image, you can see a shadow of the materials you removed by sliding the triangle along the Opacity bar. To reset the image, click **Clear**. To close the Bone Segmentation pop-up box, click the **X** in the upper right corner.



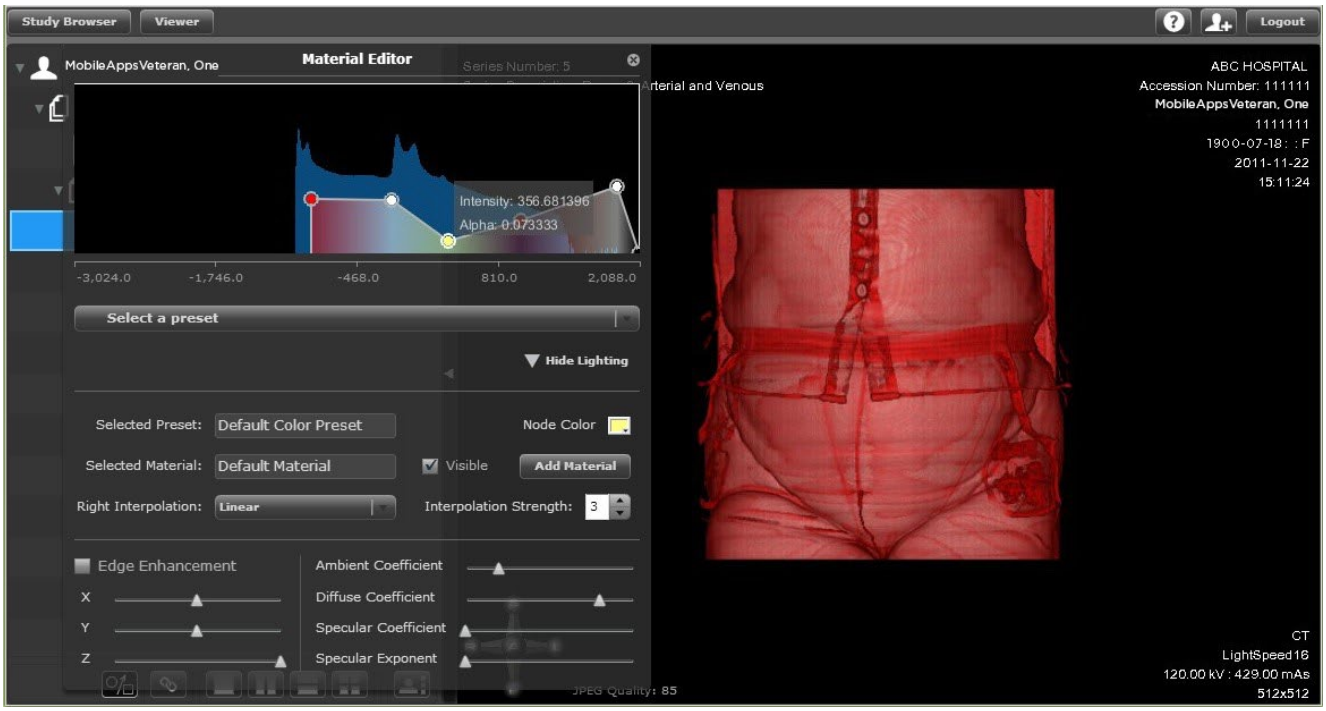
Using material editor presets

While the basic presets offered in 2D and MIP/MPR views area also available in 3D view, 3D view offers additional options. To go to the presets tool, right click on the image to display the radial menu > Click **Presets** > A Material Editor pop-up box will appear > You will see a graph or histogram that shows the tones for each pixel (the horizontal axis shows the number of tonal variations, and the vertical axis shows the number of pixels in each tone). There are two ways you can select or change the presets:

1. Adjusting the graph/histogram –The graph/histogram represents all the intensities of the data set. The background represents the entire image with the visible aspects overlaid as a shape on the histogram with editable nodes. It is possible to have multiple visible materials. You can adjust the image by clicking the dots on the graph and dragging them to see different elements of the image, such as soft tissue or blood.
2. Using the Presets bar – Under the graph/histogram, there is a bar – like in 2D or MIP/MPR view – with presets that allow you to choose and view a single element or material within an image, such as soft tissue or blood. Click the **Select a preset** bar, and a drop-down menu of presets will appear > Click the preset you would like to use > The histogram, data and image will adjust accordingly.

In the Material Editor box, there are other ways to work with presets:

- Lighting – Click **Show Lighting** > The Material Editor box will expand > The Exposition will adjust the direction from where light is coming > The coefficients will be visible for adjustment, as well as Edge Enhancement for X, Y and Z.
- Adding Materials – Click **Add Materials** > You will see presets to add to the Histogram to give a visual representation of the presets.
- Interpolation – Click the drop down box next to Right Interpolation and choose linear, logarithmic or exponential > The interpolation will change once a point on the Histogram is moved, showing both Right Interpolation and Interpolation Strength.



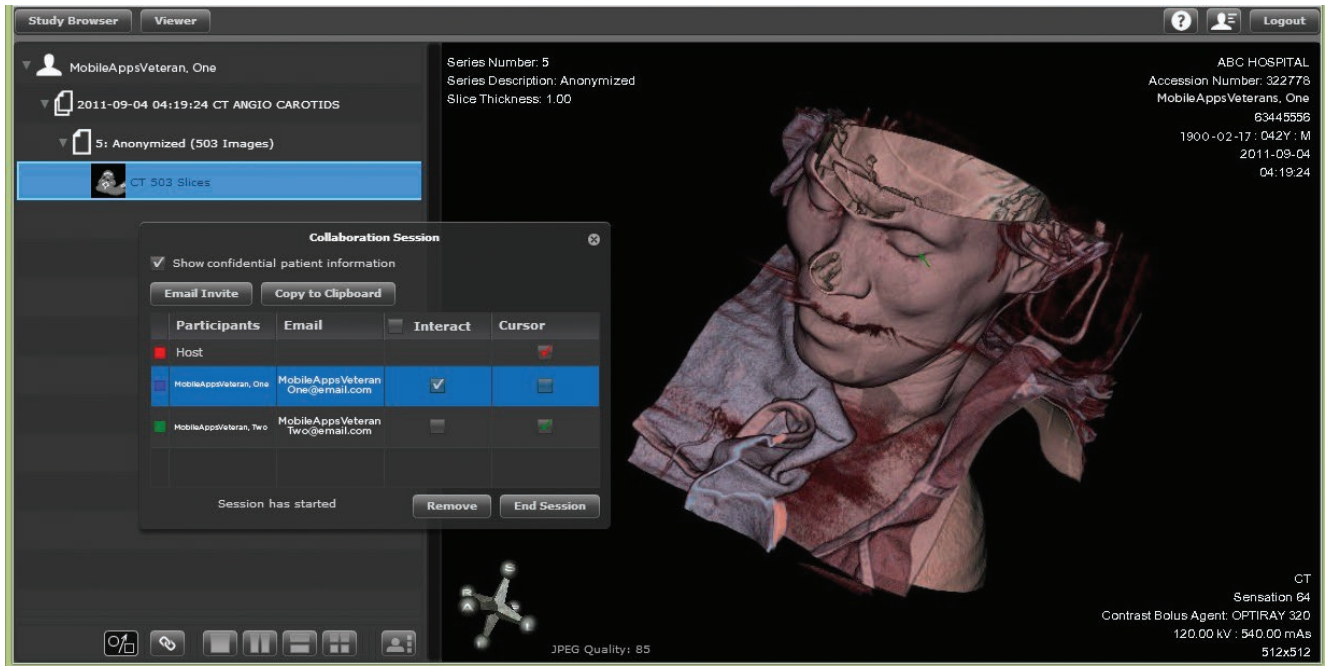
Using keyboard controls for 3D images

There are keystrokes you can use that allow you to interact with a 3D image:

Keystroke	Action
R	View image from right
L	View image from left
S	View image from superior
I	View image from inferior
A	View image from anterior
P	View image from posterior
G	Reset clipping planes
O	Turn lens tool on or off
C	Turn clipping planes on or off
Z	Undo scalpel

Collaboration

Collaboration allows multiple physicians to view a patient's images simultaneously and offer feedback. **NOTE:** When collaborating, only the host's images will be of diagnostic quality.



Hosting sessions

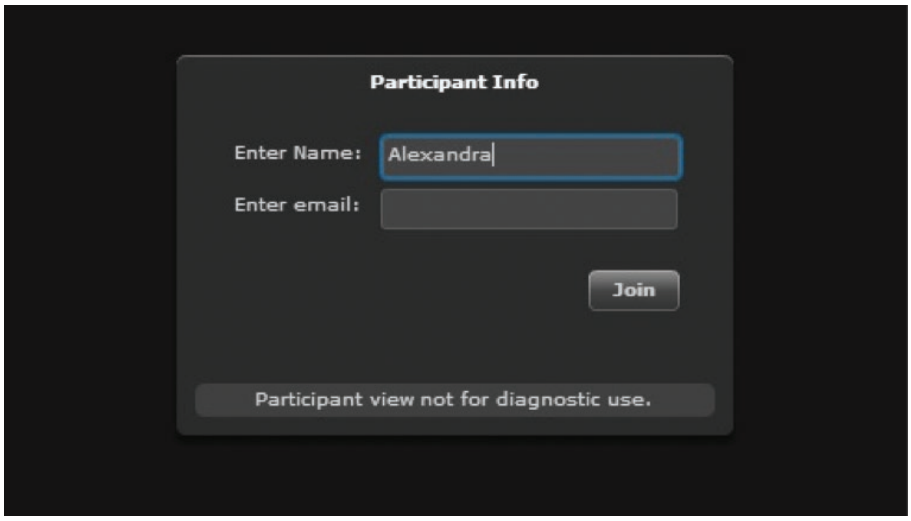
To host a collaboration session, click the **Show Collaboration Dialog** button with the person icon in the upper right corner > A Collaboration Session pop-up window will appear. As a host, you can:

- Send invites for a session – Click **Email Invite** > The email account associated with your mobile device will open with your default browser with a link to the collaboration in the body of the message > Type the email address(es) into the To field > Type your message > Click **Send**. You can invite anyone to a collaboration session, regardless if he or she is a VA provider. **NOTE:** Once you start a Collaboration, PHI or PII is automatically hidden. To show this information, check the box next to "Show confidential patient information." There is no audio component to collaboration, but conference call setup instructions can be included in the email if you want to discuss the session.
- Copy collaboration session invite link – Click **Copy to Clipboard** > The link to the collaboration session will be saved on your device > Paste the link to share it with additional participants.
- Allow a participant to interact with images – To allow a participant to use all of the interaction tools available in the app, click the checkbox in the Interact column in line with the participant's name.
- Show or hide a participant's cursor – To allow participants to point to an image without interacting with it, click the checkbox in the Cursor column in line with the participant's name.
- Remove a participant from a session – Click the participant's name in the Collaboration box > Click **Remove**.
- Show or hide confidential patient information – Click the checkbox next to "Show confidential patient information."
- End a session – Click **End Session**.

NOTE: Each session has its own link, so once you end a session, you cannot use the same link again to host or enter a collaboration session. You must send a new invite to begin every session.

Joining sessions

In order to join a session, you must have received an emailed invite for the session. Open the emailed invite > Click the link to the session provided in the email > A Participant Info pop-up box will appear > Type your name and email address > Click **Join** > You will enter the meeting and be able to see the host's screen.



Help and Additional Information

Additional Training Materials for the Imaging Viewing Solution App

The app offers a built-in User Guide, Hotkeys (keyboard shortcuts) legend and About background information, which can be accessed by right clicking on an image to display the radial menu, and then clicking **Options**. The User Guide is also accessible by clicking the question mark icon in the upper right corner of your screen. In addition to the user guides built into the app, more resources, such as a Quick Start Guide, Slideshow and FAQs, can be found on ***mobile.va.gov/appstore***, and search for the app to access the resources.

Help Desk Information

If you need assistance with the Imaging Viewing Solution App, dial **1-844-482-6624** to speak with a VA representative. The Help Desk is open weekdays from 7 a.m. to 7 p.m. CT. For TTY assistance, dial 711.

Emergencies

If you feel that your information may have been compromised, contact your local VA facility to obtain the contact information for your Privacy Officer. To locate your local VA facility, visit VA's Facility Locator: ***http://www.va.gov/directory/guide/home.asp?isflash=1***. Note that you should never use this app in an emergency situation. If you encounter an emergency, call your local medical center or dial 911.

Appendices

Appendix #1: Project References

The Imaging Viewing Solution (IVS) was integrated by Agilex [***agilex.com***] in collaboration with Calgary Scientific Inc. [***calgaryscientific.com***] according to an approved concept paper. The IVS and Integrated ResolutionMD Commercial Off the Shelf (COTS) App was tested in a VA test environment to ensure optimal functionality. ResolutionMD subject matter experts who served in the solution's creation may be reached at ***support@calgaryscientific.com***.

Appendix #2: Glossary

App – an application, or software program, that can be accessed through a website or mobile device and is designed to fulfill a particular purpose

Axial – from top or bottom

CPRS (Computerized Patient Record System) – electronic medical record applications and databases that provide a complete overview of patient's medical records

Coronal – from back or front

Curved MPR (CMPR) – a series of 2D images that follow the curvature of a specified part of anatomy. When viewed together, they present a continuous (albeit elongated) depiction of the entire anatomical structure in a single plane

Histogram – a graph that represents the distribution of data (For the IVS App, this histogram's horizontal axis represents the tonal variations, and the vertical axis represents the number of pixels in that particular tone.)

Hounsfield units – the numeric information contained in each pixel of a CT (computerized tomography) scan related to the composition and nature of tissue and used to represent the density of tissue

Modality – type of image captured

MIP/MPR – maximum-intensity projection/multiplanar reconstruction

Orthogonal – intersecting or lying at right angles

Pixel – the most basic unit of an image, generally arranged in rows and columns, with its own brightness and color

Sagittal – from left or right

Standard Deviation – a measure of the difference or dispersion in Hounsfield Units among the pixels contained within an image. A low standard deviation indicates that the data points tend to be very close to the mean; a high standard deviation indicates that the data points are spread out over a large range of values

VA – Department of Veterans Affairs

VA Mobile Health – an initiative that aims to improve Veterans' health by providing technologies to expand care beyond the traditional office visit and that includes the creation of secure mobile apps to leverage the popularity of wireless technologies to support Veterans, Caregivers and VA care teams [More at: ***mobile.va.gov***]

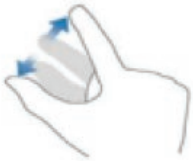
VistA (Veterans Health Information Systems and Technology Architecture) – VA's computerized patient record system

Scroll

Using a single finger drag up and down to scroll through slices. Tap to go through them one-by-one

Pan

With two fingers down move in any direction to move the image

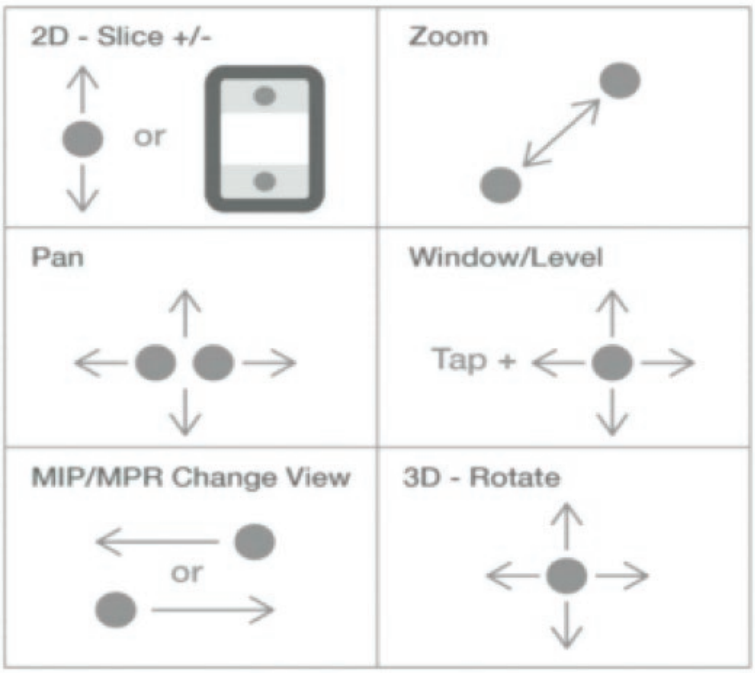


Zoom

Use two fingers or your finger and your thumb to zoom in and out of the image

Window Level

Double-tap and drag to adjust the window/level



Shake to reset