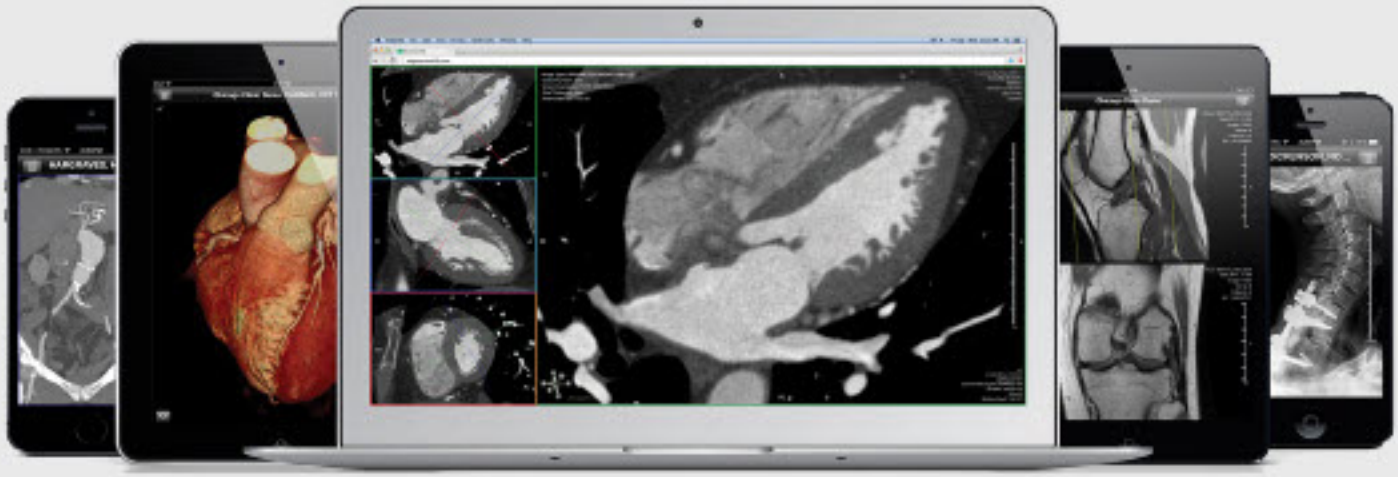
FUJIFILM
Value from Innovation

SYNAPSE® mobility

User Guide

for HTML5



Product release 8.0.0

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Last updated: 2020/12/09

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Preface

An introduction to this guide, important information about the software's regulatory status, as well as warnings, precautions, and other information about the software's intended use, capabilities, and limitation.

USER GUIDE

The Synapse® Mobility software is a medical image viewer that enables professionals — such as radiologists, physicians and other imaging experts — to view and analyze medical images and reports from anywhere using a remote connection, either over the internet or using the hospital's network.

The software features an easy-to-use search interface, collaboration, and advanced visualization functionality such as:

- 2D viewing
- Maximum Intensity Projection (MIP) including slabbing up to 50 mm
- Multi Planar Reformatting (MPR) for axial, sagittal and coronal views
- 3D volume rendering

Each view mode enables various interactions with images, data and reports, including split view, linked scrolling, cine, pan and zoom, measurements, and more.

The solution has a client/server architecture. The centralized server hosts the main service application, which is responsible for all data processing and image rendering. The service application acquires images from a connected PACS or medical image archive, and loads these images into memory. The server and the data can reside on-premise within the institution's network, or in the cloud.

You interact with the server-based application using an HTML5 client, a web-based user interface that runs in your browser. The HTML5 client is optimized for both desktop and mobile browsers, and supports touchscreen interactions.

Depending on the deployment model, some search and viewing functionality may not be available. The two possible deployment models are as follows:

- standalone application, with full search and viewing functionality
- software launched from a third-party application (such as an EMR or RIS); in this model, search and viewing functionality depends on configuration

Certain features are currently only accessible on devices with a mouse and keyboard.

This guide describes the functionality of this client in detail, and outlines some considerations when first getting started.

About this Release

Product: Synapse® Mobility 8.0.0
Client Interface: HTML5 web application
Document Number: DOC-0046692-A
Date of Last Document Update: 2020/12/09

Based on the server settings chosen, this configuration of the product is applicable for the following regions: Canada, European Community, USA, as well as any country that does not regulate software as a medical device.

See the Indications for Use and Regulatory Status section for more information.

About this user guide

This guide is distributed with the Synapse Mobility software in electronic form. You may request a paper copy by contacting your system administrator.

In this guide, any interactions that refer to clicks or double-clicks are interchangeable with taps and double-taps on touchscreen devices. While most interactions will be the same in both desktop and mobile browsers, any differences in operation on touchscreen devices will be highlighted in this guide.

Screenshots are for visual reference only.

Keyboard shortcuts are based on the location of the letters on an English US keyboard layout.

REVISIONS

Rev A, 2020/12/09	Initial release of 8.0.0 user guide

FUJIFILM DISCLAIMER STATEMENT

INDICATIONS FOR USE AND REGULATORY STATUS

Product: Synapse® Mobility 8.0.0
UDI: (01)00854904006053(10)0800000

Year of Software Release: 2020

Indications for use

The Synapse® Mobility solution is an enterprise medical image viewer used with off-the-shelf servers, web browsers, and specific mobile devices for the 2D display, multi-planar reformatting and 3D visualization of medical image data and reports. It provides collaboration and integrated secure audio-video communication, and displays DICOM and non-DICOM medical images and reports.

The software is intended for use as a diagnostic, review, and analysis tool by trained healthcare professionals to drive clinical management. When interpreted by a trained physician, reviewed images may be used to aid in diagnosis. When used on a mobile device, Synapse Mobility is not intended to replace full radiology workstations.

This product is not to be used for primary mammography diagnoses.

Regulatory status

Canada

The Synapse® Mobility software holds an active Class 2 license with Health Canada, the Canadian ministry of health.

Canadian Distributor
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CE

2797

United States

Rx Only
Caution: Federal law restricts this device to sale by or on the order of a physician.

Manufacturer

Manufacturer

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IMPORTANT SAFETY AND SECURITY CONSIDERATIONS

This section provide important information about the software's intended use, capabilities and limitations, as well as instructions to help you set up your device and your reading environment for optimal results.

⚠ Because the Synapse® Mobility software is a medical device, it is imperative that you fully understand this information before you begin using the product.

Warnings

The Synapse Mobility software should only be used by qualified professionals to review the pathology relevant to the diagnosis. It must be used only in the context of the approved Indications for Use.

The software is not intended to replace the skill and judgment of a qualified medical practitioner and should only be used by people who have been appropriately trained in the software's functions, capabilities and limitations.

When used on a mobile device, the software is not intended to replace full workstations and should be used only when there is no access to a workstation. In addition, the software is intended to be used with specific validated mobile devices (see Supported mobile devices and browsers).

This product is not to be used for primary mammography diagnoses.

Precautions

To ensure the best use of the Synapse Mobility software and its features, you should always take the following precautions into consideration.

Software features

You should ensure that the software features available on the device are appropriate prior to actual use.

You should review information in this user guide prior to using the product in order to understand the features, capabilities and limitations of the solution. If you have any questions on how to connect to the solution or requirements for additional training, you should contact your system administrator.

Lighting

The software should not be used in outdoor lighting or other high ambient light conditions. You should familiarize yourself with the viewing characteristics of the device under various lighting conditions prior to actual use.

For more information on optimal viewing conditions, see Your reading environment.

Brightness settings

You should be aware that other applications can change the screen brightness setting and ensure the recommended settings are in place prior to each use: the automatic brightness feature should be turned off, and the brightness of the screen display set to maximum.

Screen size and resolution

You should ensure that the screen size and resolution of the device are appropriate prior to actual use.

Battery life

You should be aware of expected battery life of the device under usage conditions relative to the anticipated duration of usage of the Synapse Mobility application and ensure that the device is adequately charged.

Software user profile

There are two profiles for intended users of the Synapse Mobility software:

1. Referring physicians who refer their patients to the institution or organization controlling the Synapse Mobility software for imaging studies. Referring physicians who wish to review images, in addition to reviewing the radiologists' final report of findings, to enable them to confirm their treatment plans and communicate with the patient.
2. Diagnostic imaging specialists at the institution or organization controlling the Synapse Mobility software. The solution can be used for diagnostic reading of images.

Your reading environment

It is essential that your reading environment be optimal for using the Synapse Mobility software. This includes considerations such as screen brightness settings, viewing angles, and lighting conditions, as described below.

Your device's screen

To ensure optimal viewing conditions, you must set the display brightness to the maximum value and disable any automatic brightness features on the viewing device. Be aware that other applications can change the screen brightness setting and you must ensure the recommended settings are in place prior to each use.

View the screen straight on (perpendicularly) because image accuracy degrades with viewing angle.

Your device’s screen should be clean and free of dirt, smudges and fingerprints prior to viewing medical images.

Lighting conditions

You should familiarize yourself with the viewing characteristics of the device under various lighting conditions prior to actual use.

The software should not be used in outdoor lighting or high ambient light conditions.

Position yourself and the device so that there are no visible reflections of objects or light sources on the screen. To avoid specular reflections, take special care to move to a location without bright light sources such as windows, light boxes, bright walls, and overhead lighting. Examine the display in your device’s sleep or off mode for visible reflections and reorient yourself or the display until they are not present.

The ambient lighting environment should be assessed such that illumination is equivalent to radiology reading rooms.

Ambient light assessment

You should perform a light test as described below to ensure that ambient light conditions are appropriate for use. Validated mobile devices have been tested for diagnostic use at light levels up to 300 lux which is the maximum recommended light level.

There are two patterns for assessing ambient light: TG18-CT and TG18-MP. These patterns were developed by the American Association of Physicists in Medicine (AAPM) Task Group 18[1], whose purpose is to generate a document that provides guidelines to practicing medical physicists and engineers for in-field performance evaluation of electronic display devices intended for medical use.

	**TG18-CT** This pattern is intended to support visual inspection of the luminance response of a display device. It should be evaluated for visibility of the central half-moon targets and the four low-contrast objects at the corners of each of the 16 different luminance regions.
	**TG18-MP** This pattern is intended to support visual inspection of the bit-depth resolution of a display device. It should be evaluated to ascertain the horizontal contouring bands, their relative locations, and grayscale reversals.

[1]Reference: AAPM ON-LINE REPORT NO. 03: ASSESSMENT OF DISPLAY PERFORMANCE FOR MEDICAL IMAGING SYSTEMS, American Association of Physicists in Medicine, 2005.

To assess the suitability of environmental lighting, you should review these patterns and determine whether your ability to discern the above information is comparable to ideal lighting conditions. If you are not able to perform this task, find a more appropriate environment before proceeding.

To perform ambient light user assessment:

1. Set your device's display to maximum brightness and disable auto-brightness.
2. Select **Light Test** from the settings ⚙ menu.
3. Click **Perform Light Test**.

Patient privacy

> ⚠ The Synapse Mobility software accesses images together with patient information. It is important to protect this data from access by unauthorized persons.

To protect private patient information when accessing the software remotely, you should ensure that transmissions are secure. This can be facilitated using the recommended login and connection setup provided by your hospital. See the Privacy notice.

Data limitations

You should be aware of the limitations in the accuracy and correctness of the output data displayed on the screen, printed, or exported from the Synapse Mobility software. The quality of the data is dependent on the correctness of the input data, your interaction with the data, the quality, characteristics, and settings of the display device or printer, the amount of ambient light in the vicinity and the necessity to interpolate the data for display purposes.

Medical images are susceptible to magnification errors caused by differing patient sizes and projection distances. If not corrected by the modality, these errors can affect the accuracy of the calibration information contained in the image's DICOM header. Measurement values in the Synapse Mobility software are dependent on the calibration information provided by the modality in the DICOM header. Accuracy also depends on the pixel spacing and slice interval values that are provided in the DICOM

header for the data set. Because of this, the software's measurements should be used for reference only until the accuracy of the DICOM header information can be verified or the image information has been calibrated through the use of a measurement instrument in the image.

When interacting with the worklist, you should be aware that while you are viewing any images and reports, any real-time updates on image information or availability will not automatically be seen in your current viewing session. These updates can only be viewed if you perform a new search and re-access the updated study.

Response times

Response time will vary depending on several factors, including:

- network latency (response time may be slower if you are using a remote or shared wireless data connection, for example),
- bandwidth consumption (devices with higher resolution monitors cause the server to render larger images, which consumes more bandwidth), and
- the particularities of the displayed images (window/level and other settings affect how well the images can compress, which also impacts response time)

Risk of potential errors

While the Synapse Mobility software has been tested extensively, it is impossible to completely test any piece of software, and errors may remain. It is possible that an error could manifest as an incorrect measurement or image. You must be aware of the potential for errors.

Certain views make use of interpolated data. This is data that is created by the software based on the original data set. Interpolated data may give the appearance of healthy tissue in situations where pathology that is near or smaller than the scanning resolution may be present.

Training & user familiarization

It is strongly recommended that user training be conducted by each institution implementing Synapse Mobility. This training should include:

1. Institutional on-call process for reviews to be performed using the technology.
2. Log-in protocols and security for access to the Synapse Mobility server.
3. Operation of the software and practice on various uses cases including use of the product under various lighting conditions.
4. Review of labeling including indications for use, warnings, precautions, and directions of use.
5. Criteria for activation of fall-back procedures should access to imaging data not be available or fail during attempts to access it.
6. How to access user and product support through the institution.
7. Review of criteria and procedures for reporting adverse events.

Privacy notice

The Synapse® Mobility application is an enterprise viewing platform that provides secure remote access from personal devices to diagnostic-quality medical images and other patient data.

Institutions that use this product grant authorization to some users to access patient data stored in the institution's repositories by logging into the Synapse Mobility application with their credentials. Access rights are set up and controlled by the institution.

Patient information transmitted through the application is controlled and maintained by the institution. FUJIFILM Medical Systems U.S.A., Inc. exercises no authority over the institution's privacy and data collection practices. Patient information is never stored in the Synapse Mobility client application.

Upon logging into the Synapse Mobility application with verified credentials, users are able to search and view information contained in the institution's repositories. To establish the connection between the application and the repositories, the application may collect information about the users (username, password, contact information), but none of this information is transmitted to, or used by, FUJIFILM Medical Systems U.S.A., Inc.

For technical support purposes, the application may collect select usage information (device or browser version, hardware settings, and event information such as errors and system activity).

FUJIFILM Medical Systems U.S.A., Inc. designs, builds and runs its systems to make sure that all data about the authorized users and the patients is as secure as possible at any stage, both while it is processed and when it is stored. The company is committed to keeping user and patient data secure and has set up systems and processes to prevent unauthorized access or disclosure. If FUJIFILM Medical Systems U.S.A., Inc. incorporates a third party product, the third party is also required to make sure that all data it processes about the authorized users and the patients is as secure as possible at any stage, both while it is processed and when it is stored.

SUPPORTED MOBILE DEVICES AND BROWSERS

The Synapse® Mobility client is accessed through a browser on your desktop or mobile device.

The software is intended for diagnostic use from specific mobile devices and browsers.

Supported devices and operating systems

The following mobile devices running iOS and iPadOS are validated for use with Synapse Mobility:

	Phones	Tablets
iOS 12	iPhone 5S, iPhone 6, iPhone 6 Plus	iPad Air, iPad Mini 2, iPad Mini 3
iOS 13 or 14	iPhone 6S, iPhone 7, iPhone 7 Plus, iPhone 8, iPhone X	
iPadOS 13 or 14		iPad Air 2, iPad Mini 4, iPad (5th generation), iPad (6th generation), iPad Pro (9.7"), iPad Pro (10.5"), iPad Pro (12.9"), iPad Pro 2nd generation (12.9")

The following mobile devices running Android are validated for use with Synapse Mobility:

	Phones	Tablets
Android 6	Samsung Galaxy S5	Samsung Galaxy Tab 2 10.1, Samsung Galaxy Tab S
Android 7		Samsung Galaxy Tab S2
Android 8	Samsung Galaxy S7	
Android 9	Samsung Galaxy S8	
Android 10	Samsung Note9	Samsung Galaxy Tab S4

Supported browsers

The following browsers are supported:

- **On Windows**: Microsoft Edge (Current), Internet Explorer 11, Chrome (Current), Firefox (Current)
- **On MacOS**: Safari (Current), Chrome (Current), Firefox (Current)
- **On iOS mobile**: Mobile Safari for iOS 12 or 13
- **On Android mobile**: Chrome (Current)

"Current" indicates that the automatic update default setting is supported. The minimum browser versions required are Chrome v42 (Windows/Mac), Chrome v59 (Android), FireFox v35, Safari v6, and Mobile Safari v10.

If you are using a mobile device or browser that is not on the above list, you should not use Synapse Mobility for diagnosis.

Getting started

Information about prerequisites, instructions on how to start a viewing session, and where to go for help.

LOGGING IN

This section will get you up and running with the Synapse® Mobility software in a few quick steps.

Prerequisites

Before you start using the application, check that you have the following:

- A browser and, if working on a mobile device, a validated device (see the list of Supported mobile devices and browsers).
- The URL address of the application, as well as your login credentials (if you do not have this information, contact your system administrator.)
- Access to the hospital's network, or an Internet connection.

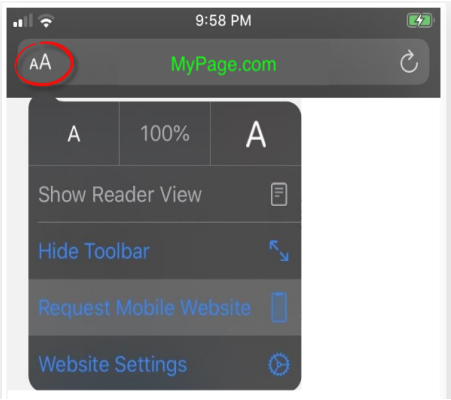
Configuring the Safari browser

The steps below are only required for users running the application in a Safari browser on an iPad.

In order to work correctly, the application must run as a mobile website. However, with the introduction of the iPadOS, Safari requests the desktop version of websites by default.

To configure Safari to read the application's pages correctly on an iPad:

1. In Safari, navigate to the URL address of the application, as provided by the system administrator.
2. Once the website has loaded, tap the **AA** button on the left hand side of the address bar. This will display a menu with some configuration options.



3. If you see the option **Request Mobile Website**, select it.

   If you see the option **Request Desktop Website** instead, the browser is already viewing the page as a mobile website, and you do not need to change the configuration.

Once Safari is set to request the mobile website for the Synapse Mobility web pages, it will remember this setting and it will not be necessary to repeat these configuration steps (unless the all the settings for the device are reset).

Starting a viewing session

To start a viewing session and begin exploring the software, simply log in.

To log in

1. Browse to the URL provided by your system administrator.
2. Enter your provided credentials in the appropriate fields.

You should now see the Synapse Mobility interface and be able to interact with the software. This verifies that your setup is working properly. If you are experiencing issues, contact your system administrator.

Switching Site

If you work for a clinical organization that has several different sites and supports site switching, you can switch site within the application.

To switch site

- Select **Switch Site** from the settings menu.

The behavior of the site switching feature depends on implementation.

Ending a viewing session

Your viewing session will automatically close if you do not interact with the software for a period of time (the default is 10 minutes), but you can also explicitly log out.

To log out

- Select **Log Out** from the settings menu.

DOCUMENTATION AND HELP

This user guide and other information are accessible from the software interface.

To access documentation

1. Click the **Documentation** tool .
2. Click the document you wish to view.

Getting help

Maintaining the application is the responsibility of the site where it is deployed, such as a hospital or other clinical environment. If you have any question or concern about the application, contact your system administrator.

Search interface

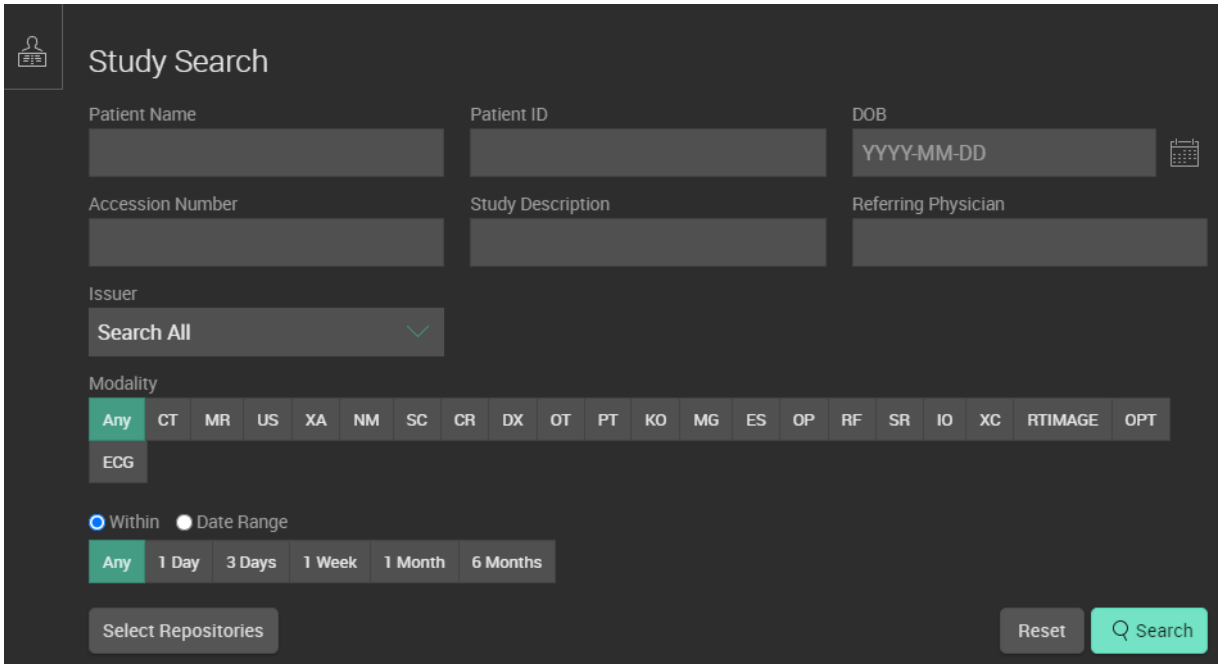
A description of the search interface, including supported search parameters, filters to narrow down the search results, and available functionality from the search results list.

PERFORMING SEARCHES

The product provides an intuitive and flexible search interface, allowing you to quickly find the studies or patients of interest.

Depending on how the system administrator has configured the server, you can find patient records by performing either a study search or a patient search. The two options provide different search parameters and organize the search results differently, but the basic functionality is the same.

Study search panel



When the software is configured for Study Search, you can use it to find, browse, and add selected studies to the worklist.

The Study Search panel supports the following criteria:

- General criteria (default): Patient Name, Patient ID, Accession Number, Modality, and Date Range.
- Additional criteria (depend on server configuration): Referring Physician, Issuer, Study Description, and Date of Birth.

In addition:

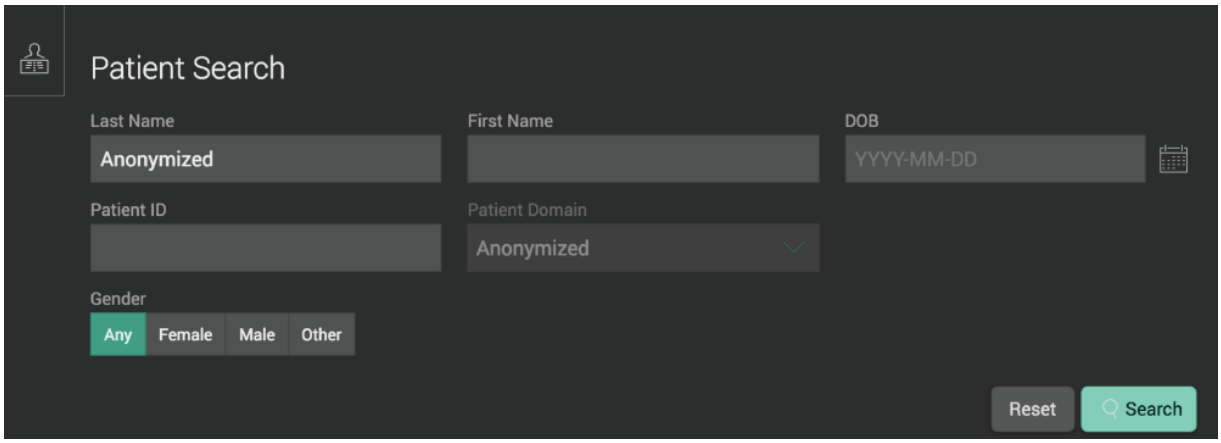
- The **Within Last** field enables you to restrict your search using preset date ranges.
- The **Date Range** field enables you to restrict your search to a date range by picking a start and end date.
- The **Modality** field enables you to restrict your search to a specific type of study, such as computed tomography (CT) or magnetic resonance (MR).

When the search feature is configured for study search, you may have access to multiple repositories. In this case, it is possible to choose which repositories to search.

To select repositories

1. Click **Select Repositories**.
2. Fill the check boxes for the data repositories you wish to search.

Patient search panel



When the software is configured for Patient Search, you can use it to find, browse, and add selected patients to the document list. From the document list, you can select content to add to the worklist.

The Patient Search panel supports the following criteria:

- Last Name, First Name. Date of Birth, and a combination of Patient ID and Patient Domain.

In addition:

- The **Gender** field enables you to restrict your search by patient gender (female, male, or other). If you do not specify a gender, the default value Any will be used.

Search operations

To perform a search

1. Enter the search term in the relevant search field (for example, to search by patient name, enter the name in the **Patient Name** field).
   - If you provide only a partial value, use asterisks before and/or after the search parameter to indicate that there is missing information.
   - The date search fields indicate what format is expected for the date; this will be either yyyy-MM-dd or dd-MM-yyyy, depending on the configuration set by the system administrator. When you enter a date, the hyphens are optional.
2. Press the **Enter** key, or click **Search**.

In some configurations, the search results contain a History section, where users can access their most recently loaded studies, eliminating the need to repeat recent searches. See Selecting recently loaded studies.

To reset your search

- Click **Reset**.

BROWSING SEARCH RESULTS

Once you have completed a search, the application displays a list of results based on your search criteria. If the application queried multiple PACS systems, it will integrate the query results together into a single unified list.

You can browse and sort the results list, preview the content of individual studies, and load series directly into the viewer.

In some configurations, returning users can access the most recently loaded studies from the History section of the search results, eliminating the need to repeat recent searches.

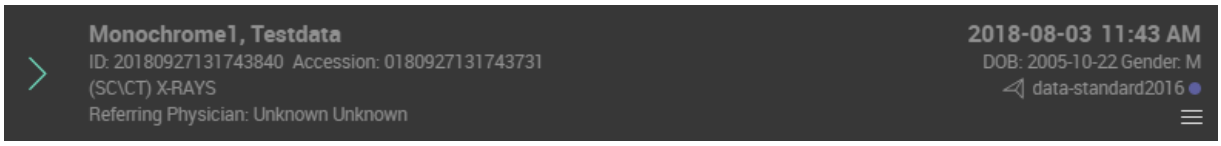
See Series and other data types for a table summarizing the types of content that can be included in studies.

Search results summary

The number of results returned is displayed above the search results.

Each entry in the search results will display a summary of the study's information (patient name, ID, gender and date of birth, and study acquisition date) to help you determine at a glance if this is the study that you are interested in.

Depending on which features were enabled by the system administrator, each entry may also include a menu (☰) and display icons that provide visual cues about the study or document. For example, in the image below containing anonymized data, the study forward icon ( ) indicates that the study has been forwarded to another institution (see Worklist menus for more information).



To sort search results

- Click the column heading that you wish to use as the sort criteria.

  Clicking the same search criteria again reverses the sorting order of the search results.

Previewing studies

Expanding a study will help you find exactly what you want to view, and gain a good idea of what a study contains before loading any actual images from the server.

When you expand a study, you will see the individual series, reports, and other patient documents that it contains.

To expand a search result entry

- Click the ›.

To collapse a search result entry

- Click the ⌄ to the left of the entry.

To select a search result entry

- Click the entry that you wish to select. It will appear highlighted when it are selected.

To deselect search result entries

Do one of the following:

- Click the selected entries. Their highlight will disappear when they are deselected.
- Click **Deselect All**. This will deselect all the entries in the search results.

To add selected studies or patient documents to the worklist

- Click **Add to Worklist**.

> Once studies or patient documents have been added to the worklist, they are greyed out in the search results.

For details on how to interact with the worklist once studies have been added, see Using the worklist.

Loading data

You can load studies and other patient documents into the viewer directly from the search results.

To open a study directly in the viewer

- Double-click the study that you want to open. This will close any other open studies.

Below are some notes about system behavior when loading content into the viewer.

- The application supports intelligent layouts, which means that it will automatically determine the optimal layout for loading images based on the modality, device screen size, and number of series in the study (unless your server administrator has disabled this feature). For more information, see Intelligent layouts.
- The Synapse Mobility software will notify you if you attempt to load unsupported data. You will be able to view the data, but there will be a persistent warning in red that you are viewing unsupported data.
- Some data sets may contain measurements and annotations saved from another viewing system, such as as GSPS (Greyscale Softcopy Presentation State) or CSPS (Color Softcopy Presentation State) information. When this is the case, an icon ( ) is displayed on the right side of the series in the search results and in the worklist. See Toggling the display of GSPS/CSPS data.

Selecting recently loaded studies

Depending on how the system administrator configured the server, you may have access to a History section in the search panel.

The history displays a list of recently loaded studies (the maximum number of entries in this list is also configured by the system administrator). This can be a time-saver, as it eliminates the need to repeat recent searches.

This list is organized in reverse chronological order, with the most recently loaded study at the top. You can navigate this list the same way you would any other search result, such as expanding studies to view their content and loading studies directly in the viewer.

USING THE WORKLIST

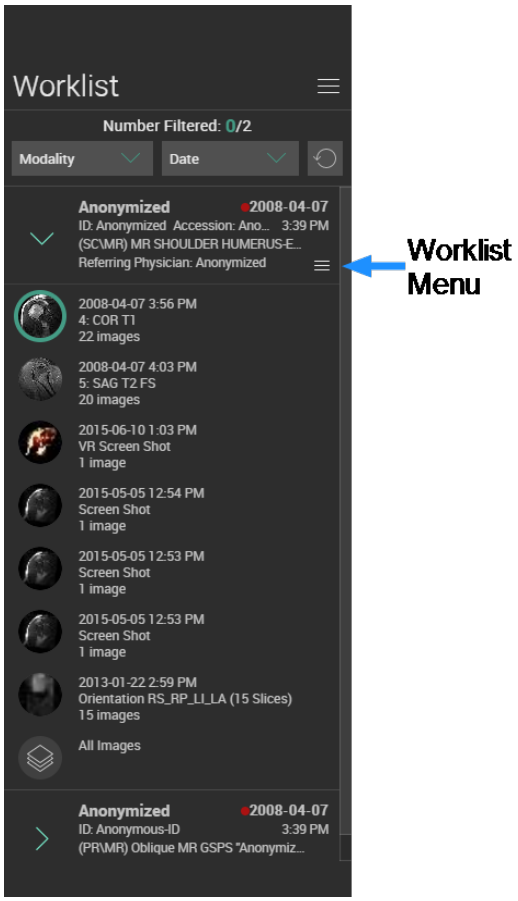
The worklist contains all the studies of interest added from the search panel.

Many of the operations that can be performed from the search results can also be performed from the worklist, including expanding studies to preview their content, and loading studies directly into the viewer. See Browsing search results.

You can also apply filters to the list, to quickly pinpoint the images that you want to view, and use the menus for quick access to other features of the application.

Depending on the size of your screen, the worklist will appear in a pane to the right of the search interface, or in a separate tab.

> ⚠ When interacting with the worklist, you should be aware that while you are viewing any images and reports, any real-time updates on image information or availability will **not** automatically be seen in your current viewing session. These updates can only be viewed if you perform a new search and re-access the updated study.



On larger screens, the worklist will also be displayed to the left of the image viewer interface, but you can toggle it on or off.

To expand the worklist

- Click the **Expand Worklist** tool.

To shrink the worklist

- Click the **Shrink Worklist** tool.

When the worklist is displayed beside the image viewer:

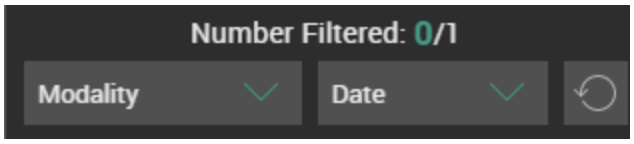
- You can load an entry by clicking and dragging it from the worklist into the viewer.
- You can return to the search results by clicking the **Data Panel** tool.

Images currently being viewed in the image viewer will be highlighted in the worklist.

A ring appears around the thumbnails of the series that have been displayed in the viewer.

Worklist filters

You can filter the studies being displayed in the worklist, either by modality or by date.



To filter studies

Do one of the following

- Click **Date** to filter by date. Dates can be filtered to: 1 Day, 3 Days, 1 Week, 1 Month, 3 Months, or 1 Year. You can apply only one date filter at a time.
- Click **Modality** to filter by modality. The modalities listed in this filter depend on the studies loaded. Multiple modalities can be used to filter the studies in the worklist.

The application will provide a summary of how many studies have been loaded into the worklist, and how many studies have been filtered out using the current filter settings.

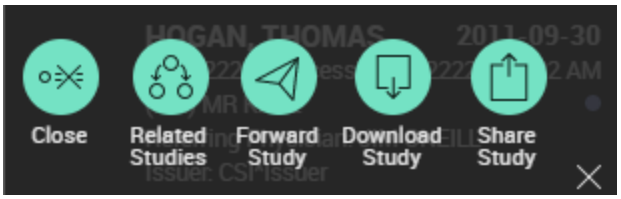
To reset the filters

- Click the **Reset** option.

Worklist menus

The worklist contains menus (☰) that provide access to other features. There are two menus:

- A global menu at the top, which provides the **Close all** option, to quickly clear the entire worklist.
- A separate menu beside each individual entry, for operations that apply to that entry only. Some of these options will only available if they have been enabled by the system administrator.



The table below provides a summary of these entry-specific menu options.

Option		Description
Close		Clears that particular entry from the worklist.
Related Studies		Launches a search for related studies. See Displaying related studies.
Forward Study		Forwards the study to another institution. See Forwarding studies.
Download Study		Downloads the study to the local computer. See Downloading studies.
Share Study		Shares the study's information through third-party services, like BEAM or DatCard. See Sharing studies.

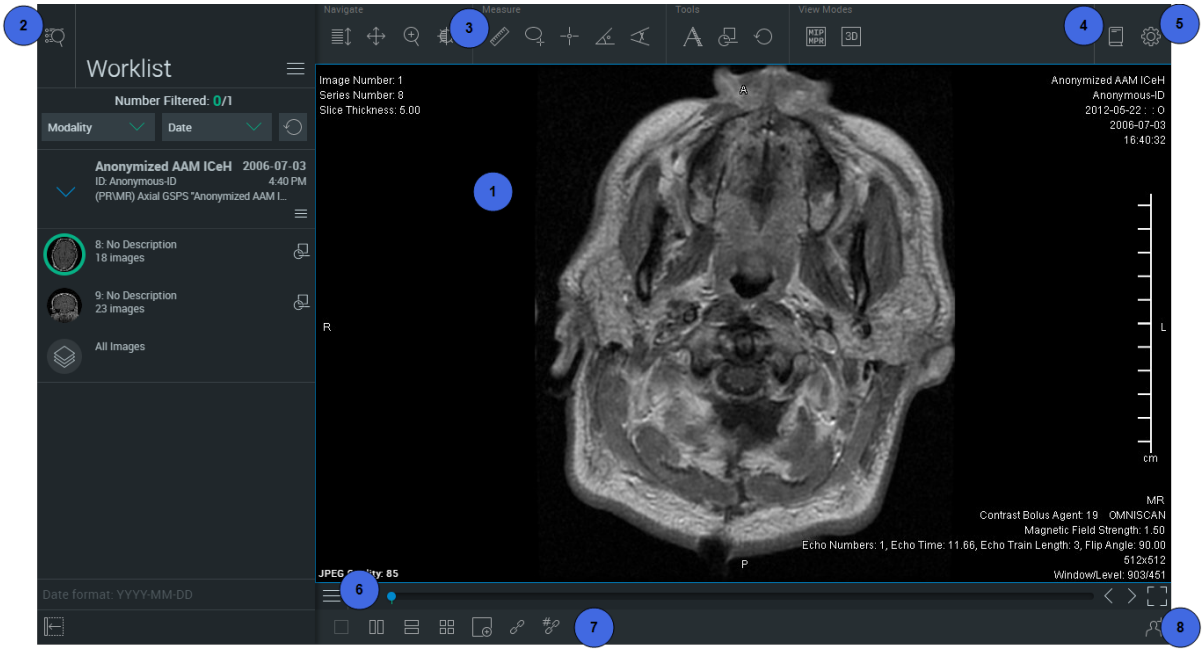
Some of these features, when enabled, are also available from a menu in search results entries.

Viewer

An overview of the viewer interface and the supported view modes, and instructions for manipulating images and making the most of the viewer's many features.

OVERVIEW

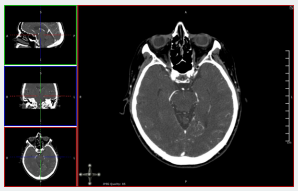
The viewer displays images and data, and provides tools for interacting with these images and data in various view modes.



1	The main view, where you can see the image currently selected.
2	The **Data Panel** tool. To access search, search results or the worklist.
3	The top toolbar. To access commonly used tools in the viewer.
4	The **Documentation** menu. To access this user guide, the hotkey reference, and information about the software. On smaller screens, the documentation is accessible from the Settings menu
5	The **Settings** menu. To configure the view. See Configuring the display settings. On smaller screens, you can use this menu to configure the toolbar and to access documentation.
6	The **view** menu.
7	2D layouts (1x1, 2x1, 1x2, and 2x2). See Selecting a layout.
8	The **Collaboration** tool. See Collaborating in real-time.

View modes

There are three different modes to view data.

	The 2D view mode displays data in a two-dimensional format. It is the default view mode, and is always available, regardless of the type of image loaded into the viewer.
	The 3D view mode renders volumes in a in a three-dimensional format. A unique lens lets you penetrate through the volume and see the inside. There are also tools to remove obscuring material from the volume, allowing you to focus clearly on a specific anatomy or pathology.
	The MIP/MPR view mode allows you to see and interact with cross sections of 2D images. You can assign curved MPR to the main view, manipulate the planes in the orthogonal strip views on the side, and change the thickness of the slabs.

Some viewer features are only available in specific view modes.

Images are initially displayed in the 2D view mode, but you can switch view modes at any time.

To switch view modes

Do one of the following:

- Click the desired mode in the top toolbar. (Only available modes are shown in the toolbar.)
- Open the view menu and select a view mode. (Unavailable view modes will be greyed out in the menu.)

To select a tool from the toolbar

- Click the tool. The tool will be highlighted when it is selected.

GENERAL NAVIGATION

This section describes the tools that are available from the user interface to perform general interactions, in other words the operations that are applicable to all view modes.

For a description of mode-specific interactions, see 2D view mode, 3D view mode, and MIP/MPR view mode.

Using the navigation tools

You can navigate images in the viewer with the navigation tools.

	**Pan** When selected, click and drag in any direction to pan the image.
	**Zoom** When selected, click an drag up and down to zoom in and out of the image.
	**Window/Level** When selected, click and drag left and right to adjust window width, and up and down to adjust window level. See also Applying presets. This tool, when working with DICOM images stored in RGB format, for example some US and SC data sets, controls the brightness and contrast; however, the brightness and contrast values are not displayed in the metadata information.
	**Invert Intensities** Select Invert from the view menu.
	**Reset** ▪ To reset a single view, use the Reset tool located in the view menu. ▪ To reset all views, use the Reset tool in main the toolbar.
	**Capture** Select Capture from the view menu. This function is used to capture a Secondary Capture DICOM image and push the newly acquired image to the appropriate PACS or VNA repository.
	**Print** Select Print from the view menu. Fill the checkbox if you wish to include confidential patient metadata in the print.  To avoid exposing confidential patient metadata, the confidential patient information checkbox is greyed out and disabled during collaboration sessions.

Using mouse and keyboard

You can navigate images in the viewer using the following methods on desktop devices with mouse and keyboard. These interactions work independently of the selected tool.

Pan	To pan the image: 1. Position the mouse pointer over the image. 2. While holding **SHIFT**, click and drag the image. This will “grab” the image so that you can move it around the main view.
Zoom	To zoom in, do one of the following: ▪ Press the **+** key. ▪ Hold **CTRL-SHIFT** while clicking and dragging the mouse cursor up. To zoom out, do one of the following: ▪ Press the **-** key. ▪ Hold **CTRL-SHIFT** while clicking and dragging the mouse cursor down.
Window/Level	To adjust window width, do one of the following: ▪ Right-click and drag left or right. ▪ Hold **CTRL-ALT**, click-drag left or right. To adjust window level, do one of the following: ▪ Right-click and drag up or down. ▪ Hold **CTRL-ALT**, click-drag up or down.
Invert intensities	Press either the **I** or the **T** key
Reset	Press the **Home** key.

Using touch gestures

You can navigate images in the viewer using the following methods on touchscreen devices.

Pan	Drag with two fingers
Zoom	Pinch or spread fingers
Window/Level	Double-tap, then drag
Reset	Shake

Applying presets

For some images, window/level or color palette adjustments help get a clearer picture.

To help you quickly make these adjustments on-the-fly, the software comes with pre-loaded presets for window/level and color palette. Which presets are available depends on the modality and view mode of the displayed images:

- In 3D view mode, window/level presets are available for all modalities
- In 2D and MIP/MPR view modes, color palette presets are available for NM and PT modalities, and window/level presets are available for all other modalities.

For modalities with color palette presets, it is still possible to adjust window/level using mouse or tap gestures.

To select a preset

1. Select **Presets** from the menu.
2. Select the desired preset. For a list of default presets, see Default presets.

When viewing multiple images simultaneously (see Selecting a layout), the preset is applied to the currently selected view.

2D VIEW MODE

The 2D view mode displays data in a two-dimensional format. It is the default view mode, and is always available, regardless of the type of image loaded into the viewer.

In this view mode, you can view slices as they were originally acquired, flip/rotate, magnify, and scroll images, as well as play series as a continuous "cine" reel, and view multiples images simultaneously for comparison purposes.

All of the methods of navigating the data described in General navigation apply in 2D view mode.

Selecting a layout

By default, the application will automatically load images in the optimal layout based on the device screen size, modality, and number of series in the study. See Intelligent layouts.

Server administrators can disable intelligent layouts. In this case, all images would load in the last selected layout (or to 1x1 layout if the last image was viewed in 3D or MIP/MPR view mode).

You can change layout at any time by selecting from the following options (some layouts may not be available, depending on screen size and device orientation):

	1x1 Single Layout
	1x2 Side-by-side Layout
	2x1 Top-Bottom Layout
	2x2 Grid Layout

If you are viewing multiple images simultaneously, each layout pane will have its own view menu, allowing you to interact with each image independently of each other. The active pane will have a border around it for easy identification.

To quickly toggle between a 2D layout and a 1x1 single layout

- Double-click the 2D layout pane you wish to see in 1x1 single layout. Double-click the view again to toggle back to the previous 2D layout.

To display selected images in 2D layouts

Do one of the following:

- Drag the desired series from the worklist into each of the panes in the layout. (Desktop only)
- Double-click the desired series.
- Tap the desired series in the worklist and tap the pane you wish to view the image in. (Touchscreen only)

Linked Scrolling

When scrolling is linked, images in different views that share a common frame of reference will scroll together.

To link scrolling

- Click the **Link Scrolling** tool .

To manually link scrolling by slice

Sometimes the data set does not contain slice position information and you must manually align the views visually by scrolling to the desired parts of the anatomy before linking the views.

1. Scroll each of the views to the respectively desired slices.
2. Click the **Link Scrolling by Slice Number** tool .

Changing the image orientation

Orientation information is always visible to clearly indicate how a patient is oriented (posterior, anterior, superior, inferior, right lateral or left lateral).

In 2D view mode, patient orientation is indicated using letters at the edge of the image (top, bottom, left, and right).

> The letters displayed as orientation labels at the edge of the image come from the DICOM source data, and could vary depending on the data set (if the data was generated in a different language, for example).

You can quickly change the patient orientation to view the image from different angles by using the mirror and rotate tools.

	**Mirror Vertical**
	**Mirror Horizontal**
	**Rotate clockwise**
	**Rotate counter-clockwise**

Scrolling through images

You can scroll using either the Scroll tool or, when a tool other than Scroll is selected, you can scroll using mouse and keyboard or touch gestures.

To scroll using the Scroll tool

1. Click the Scroll (≣↕) tool.
2. Click the main view, then drag up or down.

To scroll using mouse and keyboard

Do one of the following:

- Scroll up and down with the mouse wheel.
- Press the **Right** arrow key to advance to the next slice and press the **Left** arrow key to go back to the previous slice.

To scroll using touch gestures

- Drag up/down.

Alternately, to scroll through single images:

- Tap near the top or bottom of the view

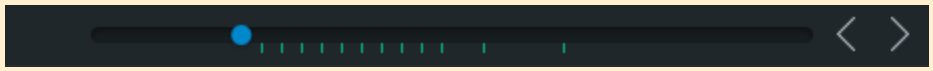
To scroll through images using the image slider bar

- Click the slider and drag left or right.

You can also "jump" to an image by clicking directly on the image slider bar.

If the series contains GSPS/CSPS objects, the image slider bar will display vertical ticks indicating the location of the images that contain these objects. You can use these ticks to jump to the images.

You can also scroll through only the images containing GSPS/CSPS objects by using the next and previous buttons to the right of the bar.



Using cine

Cine mode automatically scrolls through images at the current window/level and zoom settings. Motion studies, such as cardiac ultrasound or X-ray angiography, will automatically open in cine mode at the frame rate specified in the DICOM header.

Viewer interactions such as pan, zoom, window/level etc. are disabled while cine mode is activated.

To activate cine mode

- Select **Cine** 🎞 from the view menu. The image slider bar will fill with color indicating data buffering progress.

To start scrolling

- Click the **Play** button ▷. (You may start scrolling even while the data set is being buffered.)

To stop scrolling

- Click the **Pause** button ▯▯.

To adjust maximum framerate

- Click the **fps** button and adjust the slider to the desired framerate.

To reverse scrolling direction

- Click the **fps** button and click to fill the **Playback Reversed** check box.

To deactivate cine mode

- Click the **X** button.

Viewing the content of the DICOM header

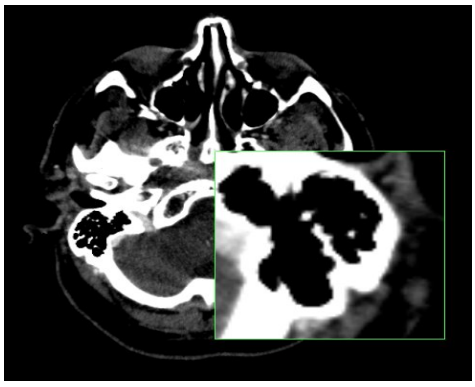
Some elements of the DICOM header appear as an overlay over the DICOM images. The level of metadata shown in this overlay is configurable (see Configuring the level of metadata). In 2D view mode, you can also view the entire content of the DICOM header; this feature displays the full metadata in a table format in a separate window.

To display the content of the DICOM image header:

- Select **DICOM Header** from the view menu.

Magnifying part of an image

On desktop browsers, you can magnify a region of an image with the **2D Lens** tool.



To toggle the 2D Lens tool

- Select **Lens** from the view menu.
- Press the **O** key.

To move the lens over the image

- Click on the magnified region and drag to reposition the magnifying glass.

3D VIEW MODE

The 3D view mode renders volumes in a in a three-dimensional format. A unique lens lets you penetrate through the volume and see the inside. There are also tools to remove obscuring material from the volume, allowing you to focus clearly on a specific anatomy or pathology.

All of the methods of navigating the data described in General navigation apply in 3D view mode.

Changing the image orientation

Orientation information is always visible to clearly indicate how a patient is oriented (posterior, anterior, superior, inferior, right lateral or left lateral).

There are various methods for changing this image orientation, described below.

Keyboard shortcuts

You can use preset hotkeys (keyboard shortcuts) to orient the volume of the image to different positions, or to return it to a known position.

The preset hotkeys for patient orientation in 3D mode are based on the position of the keys on an English US keyboard. The hotkey letters never change, regardless of the user's language or keyboard.

Orientation	Keyboard Shortcut
Left Lateral	**L**
Right Lateral	**R**
Posterior	**P**
Anterior	**A**
Superior	**S**
Inferior	**I**

Interactive orientation widget

In 3D view mode, patient orientation is indicated using an interactive orientation widget in the bottom right of the image. You can snap the volume to any of the six standard orientations by clicking the spheres on the orientation axis.

Rotate feature

The Rotate feature lets you quickly rotate a volume in any direction.

To use the Rotate tool

1. Click the Rotate tool ↻.
2. Click the image, then drag in any direction.

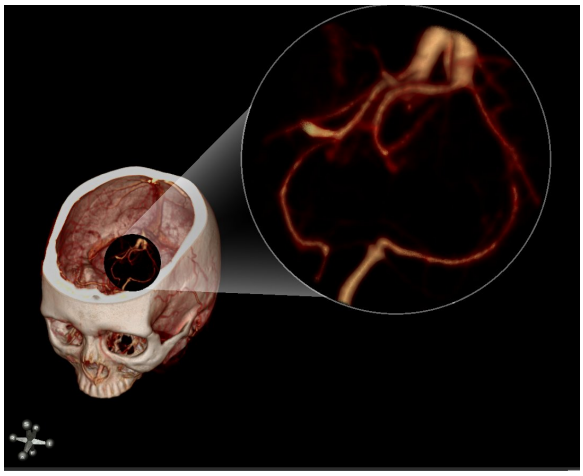
To rotate by using touch gestures

- Drag the image with your fingers

Magnifying part of a volume

On desktop browsers, you can use the lens tool to magnify a selected portion of the volume in the 3D view mode while keeping the entire volume in the main view. A magnified view is displayed in the upper-right corner.

The lens tool is made up of a lens and a magnified view. The magnified view shows a close-up of the area covered by the lens.



To enable the lens tool

- Press the **O** key.

To move the lens over the volume

1. Position the pointer over the lens to select the lens.
2. Click and drag to reposition the lens.

To move the lens through the volume

1. Position the pointer over the lens.
2. Scroll the mouse wheel up to push the lens deeper into the volume or down to move the lens in the opposite direction.

To adjust the magnification of the lens view

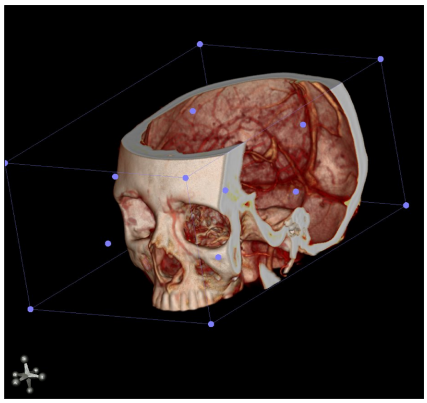
1. Position the mouse pointer over the magnified view. This selects the magnified view.
2. Do one of the following:
   - Scroll the mouse wheel up to increase magnification.
   - Scroll the mouse wheel down to decrease magnification.

Removing obscuring anatomy

You can use either the clipping planes tool or the scalpel tool to remove obscuring material from a 3D volume. The scalpel tool is only available on desktop devices.

Using clipping planes

You can slide clipping planes into the volume to cut away obscuring features. Clipping planes appear as a box drawn around the outside of the volume with spherical “handles” located on the corners and sides.



To toggle the clipping planes

Do one of the following:

- Select **Clipping Planes** from the view menu.
- Press the **C** key.

To rotate the clipping planes

Do one of the following:

- Click on an edge of the clipping planes and drag.
- Click on a corner of the clipping planes and drag.

To resize the clipping box

- Click a “handle” located in the side of the clipping planes and drag.

To rotate the volume when clipping planes are enabled

- Click outside the clipping planes and drag.

To reset the volume's clipping planes and orientation

Do one of the following:

- Click the **Reset** tool.
- Press the **HOME** key.

To reset the volume's clipping planes (desktop only)

- Press the **G** key.

Using the scalpel tool

You can use the scalpel tool to cut away obscuring anatomy with a much greater degree of precision than using clipping planes.

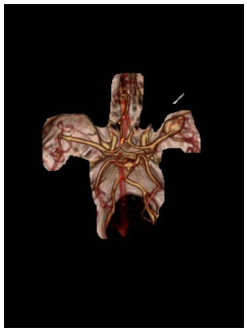
To toggle the scalpel tool

- Press the **X** key.

To cut away obscuring features

1. Left-click and drag the scalpel around the region of interest to create an outline.
2. When satisfied with the shape of the outline, release the mouse button. Position the mouse cursor over the region you wish to highlight and remove.

3. Press **Delete** to remove the region.



To undo cuts made with the scalpel tool

- While the scalpel tool is enabled, press **Z**.

MIP/MPR VIEW MODE

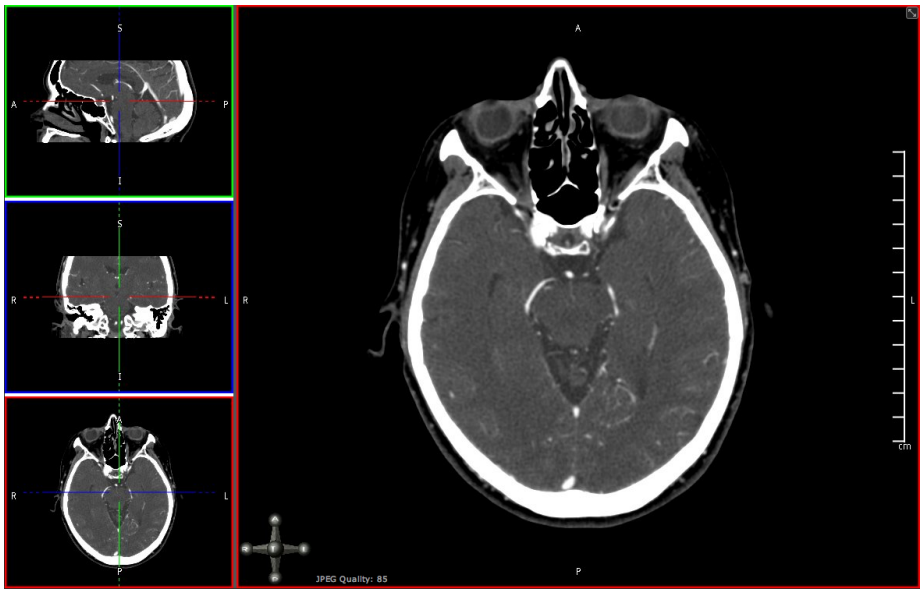
The MIP/MPR (maximum-intensity projection/multiplanar reconstruction) view allows you to see and interact with cross sections of 2D images.

A MIP/MPR image has three orthogonal views. For easy identification in the interface, each view is framed in a color-coded border:

- Green - sagittal
- Blue - coronal
- Red - axial

For colorblind users, the three orthogonal strip views are framed in green (top), blue (mid), and red (bottom).

Each of the colored positional lines in the orthogonal strip views represents the plane of one of the other views. For example, the red positional lines in the top and middle strip views represent the position of the bottom strip view with the corresponding red border.



To assign an orthogonal view as the main view

- Double-click the desired strip view.

All of the methods of navigating the data described in General navigation apply. In addition, you can perform the mode-specific interactions described below.

Changing the image orientation

Orientation information is always visible to clearly indicate how a patient is oriented (posterior, anterior, superior, inferior, right lateral or left lateral).

The letters displayed as orientation labels at the edge of the image come from the DICOM

source data, and could vary depending on the data set (if the data was generated in a different language, for example).

In MIP/MPR view mode, patient orientation is indicated using an interactive orientation widget in the bottom right of the image. You can snap the volume to any of the six standard orientations by clicking the spheres on the orientation axis.

Scrolling through images

You can scroll using either the Scroll tool or, when a tool other than Scroll is selected, you can scroll using mouse and keyboard or touch gestures.

To scroll using the Scroll tool

1. Click the Scroll (≣↕) tool.
2. Click the main view, then drag up or down.

To scroll using mouse and keyboard

Do one of the following:

- Scroll up and down with the mouse wheel.
- Press the **Right** arrow key to advance to the next slice and press the **Left** arrow key to go back to the previous slice.

To scroll using touch gestures

- Drag up/down.

Alternately, to scroll through single images:

- Tap near the top or bottom of the view

Manipulating planes

The following procedures describe how to manipulate the planes in the strip views.

To move a plane orthogonally

- Click a solid part of a positional line and drag.

To rotate a plane

- Click a dashed part of a positional line and drag.

To freely move a set of positional lines

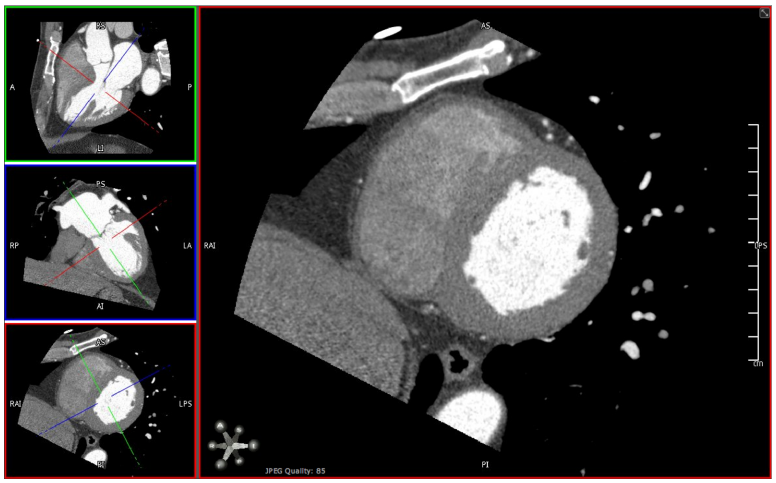
- Click in the center of the “cross hair” formed by the positional lines and drag.

  You can also instantly center the positional lines on a region of interest by directly triangulating a point.

To directly triangulate a point

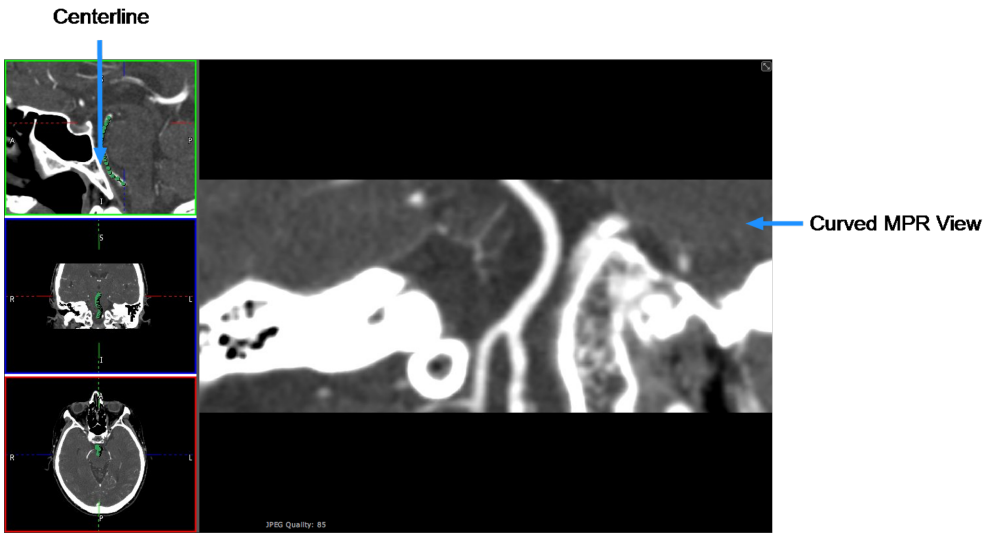
- Hold **CTRL** and click on a desired point in any of the strip views. (Hold **CMD** and click on Mac)

The following double oblique view was created using these methods.



Using curved MPR

You can assign the curved MPR view to the main view by double-clicking the curved MPR view, as seen in the following example.



The following procedures describe how to use the curved MPR view.

To enable curved MPR

- Select **CMPR** from the view menu.

By default, the bottom left pane becomes the curved MPR.

To define a centerline

Do one of the following:

- Hold down the left mouse button and draw the centerline in any of the views. (desktop only)
- Draw the centerline by dragging your finger on any of the views. (touchscreen only)
- Define a centerline by clicking points in any of the views.

> You can zoom and scroll through slices while defining a centerline.

To adjust the centerline

- Click and drag any of the handles along the centerline.

To rotate the curved MPR view

- Click and drag anywhere in the curved MPR view.

To reset curved MPR (desktop only)

- Press the **D** key.

To undo changes to the centerline (desktop only)

- Press the **Z** key.

> Pressing the **Z** key repeatedly will undo successive changes.

Working with thick slabs

Thick slabbing is useful for viewing a thicker portion of the data in a single image.

> In some implementations, thick slabbing will be enabled by default as soon as you select the MIP/MPR view mode.

To enable thick slab

- Select **Thick Slab** from the view menu. The thickness of the slab will be displayed in the view (by default, this is 10 times the acquisition slice thickness).

To adjust the thickness of the slab

- Click the **+** or **-** buttons.

MEASUREMENTS AND ANNOTATIONS

The application provides tools for making measurements and adding annotations, as described in this section.

On touchscreen devices, use the precision loupe to magnify finger placement for pixel-level precision of measurements and annotations.

Medical images are susceptible to magnification errors caused by differing patient sizes and projection distances. If not corrected by the modality, these errors can affect the accuracy of the calibration information contained in the image's DICOM header. Measurement values in the Synapse® Mobility software are dependent on the calibration information provided by the modality in the DICOM header. Accuracy also depends on the pixel spacing and slice interval values that are provided in the DICOM header for the data set. Because of this, measurements should be used for reference only until the accuracy of the DICOM header information can be verified or the image information has been calibrated through the use of a measurement instrument in the image.

Measurements rely on certain DICOM metadata to be in place, including Rescale Slope, Rescale Intercept, and Pixel Spacing. In the event that this metadata is not contained in the DICOM images being viewed, any measurements placed will be reported as "n/a".

Making measurements

The following types of measurement tools are available in the 2D and MIP/MPR view modes. In the 3D view mode, only linear measurement is available.

Not all measurement types are supported in all modalities. If you attempt an unsupported measurement, a visual cue will be displayed to indicate that the measurement is not applicable.

	**Linear** Measures the distance between two points in the view
	**ROI** Measures the area, mean signal intensity, and standard deviation within an ellipsoid region of interest (ROI)
	**Point** Measures the signal intensity of a selected pixel in the view
	**Angle** Measures the angle between definable segments
	**Cobb** Measures the Cobb angle between definable segments

To make linear measurements

1. Select the **Linear** tool.
2. Click the first point on the image and drag to the second endpoint and release the mouse button.

To make ROI measurements

1. Select the **ROI** tool.
2. Click and drag to draw the ROI.
3. Click and drag the handles at the corners of the ROI to adjust the size and shape of the region.

To make point measurements

1. Select the **Point** tool.
2. Click on the point you wish to measure.

To make angle measurements

1. Select the **Angle** tool.
2. Click where you wish to measure.
3. Drag the handles to adjust the angle as required.

To make Cobb angle measurements

1. Select **Cobb** from the measurement panel.
2. Click and drag to define the first line.
3. Click and drag to define the second line.
4. Drag the endpoints to adjust the angle as required.

Manipulating measurements

While any measurement tool is selected, you can select and make changes to existing measurements.

To select a text box

- Click on the text box.

To select measurements

- Click anywhere on the measurement or markup. (Ensure that the mouse cursor becomes a hand before clicking.)

To select endpoints on measurements

- Click on an endpoint.

To move text boxes

1. Select the text box.
2. Drag to your desired location.

To move endpoints

1. Select an endpoint.
2. Drag to your desired location.

To move measurements

1. Select the measurement.
2. Drag to your desired location.

To delete measurements or markups (mouse and keyboard only)

1. Select the measurement. (You may select the text box.)
2. Press the **Delete** key or click the **Delete** tool.

Working with annotations

You can use the annotation tool to write and edit annotations in the viewer.

To add an annotation

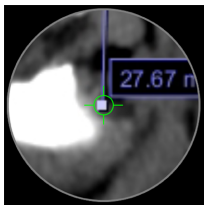
1. Select the **Annotation** tool from the toolbar.
2. Click on the image where you wish to annotate.

To edit an annotation

1. With the annotation tool selected, click in the text box of the annotation.
2. Edit text as desired.
3. Press **Enter**.

Using the precision loupe

The precision loupe is available on touchscreen devices only. It enables touchscreen device users to interact with the view with pixel-level precision. When measurement or annotation tools are selected, the precision loupe appears as a magnification of the region directly under the user's finger, with a single pixel centered in the cross-hairs.



You can "click" on the view using the precision loupe to accurately place and select points for adding and manipulating measurements and annotations.

To "click" using the precision loupe

1. Position the loupe with the cross-hairs centered on the desired pixel.
2. Hold the loupe still for a moment. The cross-hairs will shrink and "click" on the pixel.

To delete an annotation or measurement using the precision loupe

1. Position the loupe with the cross-hairs centered on the annotation or measurement point you wish to delete.
2. Hold the loupe still for a moment. The cross-hairs will shrink and select the point.
3. Click the **Delete** 🗑 tool.

CONFIGURING THE DISPLAY SETTINGS

This section describes how to configure the viewer's display settings, such as the level of metadata displayed and the quality of the images.

Configuring the level of metadata

The default display setting will automatically set the metadata display level based on the size of the image view.

You can change this default behavior so that the level of metadata remains constant, regardless of the view size. There are four possible configurations to choose from.

	Auto Metadata Display
	Full Metadata Display
	Limited Metadata Display
	No Metadata Display

To configure the metadata display

1. Select **Display Settings** from the settings menu.
2. Select the desired level of metadata display:

> Changing the level of metadata display has no effect when viewing waveform data, such as ECG test results.

Toggling full screen mode

Depending on the screen size of your device, you may have the option to switch to full screen mode. Full Screen mode maximizes the amount of screen area dedicated to the image.

To enable full screen

- Select **Toggle Full Screen** from the settings menu

To disable full screen

Do one of the following:

- Select **Toggle Full Screen** from the settings menu.
- Press the **Esc** key.

Toggling the display of GSPS/CSPS data

Some data sets may contain measurements and annotations saved from another viewing system, such as as GSPS (Greyscale Softcopy Presentation State) or CSPS (Color Softcopy Presentation State) information. When this is the case, an icon ( ) is displayed on the right side of the series in the search results and in the worklist.

To toggle GSPS display

- Click the **GSPS Data** tool .

Adjusting the image quality

Depending on the quality of your network connection, you can adjust the image quality to fine tune performance.

The interactive quality slider adjusts the image quality during interaction with the volume and reduces the amount of network bandwidth used. The final quality slider adjusts the quality of the image after interaction.

> User-selected quality settings may result in information loss from the original imagery. Diagnostic interpretation should not be formed from the interactive images but only from the static, final-quality resulting image.

To adjust image quality

1. Select **Display Settings** from the settings menu.
2. Adjust the quality sliders.

Using multi-monitors

The software supports the configuration and use of multi-monitors with a workstation by opening a new window which can be viewed on a separate monitor. This allows users to fully utilize the workspace of a multi-monitor workstation for viewing medical images and reports.

This feature has a few restrictions:

- Synapse Mobility supports a maximum of two windows.
- You can only view one 3D view or one MIP/MPR at a time.
- The behavior varies slightly depending on the browser used: Firefox and Internet Explorer 11 will launch, position and resize the second window. Chrome and Safari will launch the second window, but you will need to position this window as desired.

> Collaboration while using multi-monitor can be initiated from either monitor and will share the contents of that monitor with session participants.

To open a second window

1. Select the **New Window** tool .
2. Drag and resize the second window as desired.

Alternatively,

1. While in the viewer, select **Display Settings** from the settings menu.
2. Select the **New Window** tool.
3. Drag and resize the second window as desired.

To save the multi-monitor configuration

1. While in the viewer, select **Display Settings** from the settings menu.
2. Select the **Save Displays** tool.

Additional features

Instructions related to additional features such as real-time collaboration, study sharing and study forwarding. Many of these features are only available if they are enabled by the system administrator.

DISPLAYING RELATED STUDIES

Related studies are studies with the same Patient ID as the study that you can currently viewing in the worklist. Having a list of related studies is useful when choosing series to display in split view layouts. See Selecting a layout.

Depending on server configuration, related studies may be displayed automatically, or you may need to explicitly select this option.

To display related studies

- Select **Related Studies** from the worklist menu.

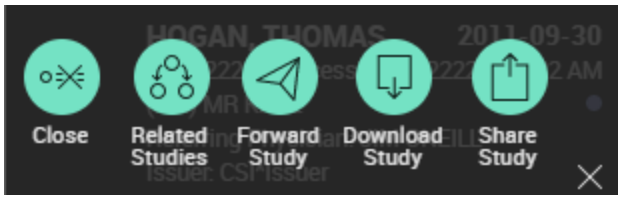
DOWNLOADING STUDIES

This feature downloads all the files that comprise the study into a compressed format (.zip). The content is then available for importing in a different PACS.

This feature relies on the web browser's functionality; and therefore the download behavior and the location of the downloaded content will depend on which web browser is used.

To download a study (if enabled)

- Select **Download Study** from the worklist menu (see Worklist menus).



This option is also available from the study menu in the search results.

FORWARDING STUDIES

The study forwarding feature allows you to send patient data (the selected study) to another institution. For example, this could be used in a primary stroke center to forward patient data to a comprehensive stroke center.

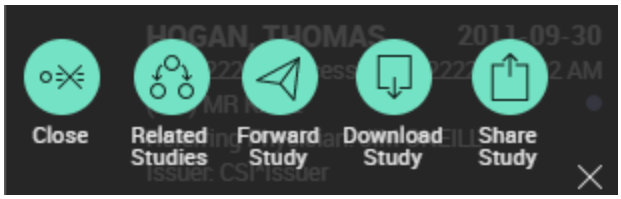
> This feature is only available if study forwarding has been enabled by the system administrator.

The option to forward studies is available from that study's menu, which is displayed beside the study in the search results, and in the worklist.

To forward a study

Do one of the following:

- Select **Forward Study** from the study menu in the search results.
- Select **Forward Study** from the study menu in the worklist (see Worklist menus).



The operation of forwarding a study cannot be undone. To prevent accidental forwarding of patient data, a dialog box will appear asking you to confirm that this is really what you want to do. Click **Forward** to accept.

Once a study has been sent, the forwarded study icon ( ) will displayed besides the study in the search results and in the worklist, for easy identification.

SHARING STUDIES

The study share feature facilitates sharing studies with other clinicians. The Share Study action enables you to share study information through third-party services, like BEAM or DatCard. You can access this feature by clicking on the **Share Study** button in the worklist menu for the desired study in the worklist.

The Share Study action will only be available if sharing study actions have been configured.

To open the Share Study panel

- Select **Share Study** from the worklist menu.

You may need to disable your browser's popup blocker for the Share Study panel to appear.

To share a study

- Open the Share Study panel and select the desired sharing action. A new browser tab will be opened where you can specify the required information to share from the selected study.

Only one study can be shared at a time.

COLLABORATING IN REAL-TIME

Collaboration functionality enables you to share the current viewing session with other users on the web or on mobile devices.

From the collaboration panel, you can also access **Spaces by PureWeb**, if your institution subscribes to it. This will launch a cloud-managed collaboration service where you can share and discuss content from multiple applications.

To open the collaboration panel

- Click the **Collaboration** tool in the viewer.

> In a collaboration session, only the host's view is of diagnostic quality.

Hosting sessions

Setting up a session is easy, and simply involves sharing a link.

> Participants will be able to see all your interactions in the viewer as long as the session is active.
>
> The aspect ratio seen by participants is determined by the host's own display.
>
> Reports and scanned documents cannot be displayed to the collaboration participant, and PDF reports cannot be viewed at all during the collaboration session.

The collaboration panel contains the interface for inviting participants and administering their permissions for the session.

To invite a user to a session via email

1. Click **Email** in the collaboration panel. This will create a message in your default email client.
2. Enter the recipient's email address in the **To:** field of the message.
3. Send the message.

You can also send an invitation by providing participants with a link via other means of your choosing.

To copy the link to the session

- Click **Copy Link** in the collaboration panel.

To toggle confidential patient information

- Fill or clear the **Show confidential patient information** check box in the collaboration panel.

> This option only appears if the server is configured to display confidential patient information.

To end a collaboration session

- Click **End Session** in the collaboration panel.

Managing permissions

A list of participants will be visible in the collaboration panel. The host can grant or revoke permission for participants to interact with the session.

To toggle a participant's ability to interact with the session

- Click the **Interact** tool beside the participant's name in the collaboration panel.

To toggle the pointer

- Click the **Pointer** tool beside the collaborator's name in the collaboration panel.

To remove a participant from the session

- Click the **X** beside the participant's name in the collaboration panel.

Joining sessions

All invited participants have to do to join a session is navigate to the link sent by the host.

If the host has already loaded images, participants will see the image view and the host's mouse cursor.

To join a collaboration session

1. Click the link in the invitation email or otherwise provided by the session's host.
2. Enter your name and email address to identify yourself to the host.

Communicating through audio/video

It is possible for collaborators to communicate in a real-time audio/video (A/V) session. You may need to grant your web browser access to your device's camera.

> Audio/video functionality does not work in Internet Explorer 11.
>
> In a multi-monitor setup, audio/video collaboration is only available in the parent window.

To initiate an A/V session

- Click the **A/V Share** tool to begin sharing video from your camera with other collaborators.

To stop sharing from your device

- While sharing video, click the **A/V Share** tool.

To resize an A/V window

- Click and drag the bottom-right corner of the window.

To adjust the opacity of an A/V window

- Click and drag the slider located at the bottom of the A/V window.

References

The references section provides additional information about some of the features discussed in this guide.

SERIES AND OTHER DATA TYPES

The table below summarizes the types of content that can be included in studies.

	**Series** Series are how the DICOM model organizes images, based on modality and timestamp. A series can contain one or more images. For modalities that contain multi-frame datasets, such as US, XA and NM, the system administrator may choose to configure the server so that all single-frame images are grouped into a single series. This makes the study list less overwhelming and easier to navigate. The series that contains the grouping of single-frame instances will appear at the bottom of the series list within the study. In the study's preview, the thumbnail shows a miniature of the first image in the series.
	**All Images series** A combination of all images in a study, as if it were a single stack. Series of type "All Images" are best suited for viewing studies that contain multiple single-image series, such as CR or DR studies, to avoid having to load single images individually.  Any study that contains DICOM images will also contain a special All Images series.
	**Key image series** Studies containing key images (images of particular interest) appear in the worklist list as a large key preview icon. Series that contain key images are marked with small key symbols beside the series name.
	**Restricted studies** Restricted studies have a higher level of security, and are only accessible to authorized users. Depending on your institution's workflow and your permissions level, you may have direct access to this data, be redirected to an external authorization service, or be presented with a message instructing you to request access some other way.
	**Sensitive images** If the selected study contains sensitive images, you will be asked to check your work environment before accessing it.
 	**Reports** A non-image file that provides information about the patient or the study, for example notes from the referring physician. The software supports a number of report formats, such as Basic Text Structured Reports, encapsulated PDF, native PDF, and FHIR. The thumbnail will give an indication of the type of report.

	**Audio files** A sound file, for example a dictated report. When you load a audio file, a dialog box opens, where you can control file playback and volume.
	**Videos** The application can play any non-DICOM video file included in a study.
	**Waveform data** The application can display waveform data, such as results from electrocardiogram (12-Lead ECG) tests.

KEYBOARD AND MOUSE SHORTCUTS

On desktop browsers, you can quickly get around the interface with the following keyboard shortcuts.

Keyboard shortcuts are based on the location of the letters on an English US keyboard layout.

General navigation

Shortcut	Function
SHIFT-W	Move focus to worklist
SHIFT-V	Open image viewer
SHIFT-R	Open search results
SHIFT-S	Open and move focus to search panel
SHIFT-X	Toggles worklist panel if the screen is large enough to show both the viewer and worklist

Navigation within the viewer

Shortcut	Function
HOME	Reset view
-	Zoom out
+	Zoom in
SHIFT-Click and Drag	Pan/Translate
DELETE	Remove selected markup or node. Removes selected area in 3D scalpel
Right-click and Drag	Window/Level
V	Reset Window/Level
CTRL-SHIFT-Click and Drag	Zoom

2D

Shortcut	Function
Click and Drag	Scroll
ALT-Mouse Wheel	Zoom
D	Reset Pan and Zoom

Shortcut	Function
S	Return to default slice
1-0	Window/Level presets (all modalities except NM and PT)
PERIOD	Color palette presets (NM and PT modalities)
I	Invert intensities
T	Invert intensities
O	Toggle magnifying glass
LEFT ARROW	Scroll up
RIGHT ARROW	Scroll down
UP ARROW	Navigate one image stack up in a multi-stack series
DOWN ARROW	Navigate one image stack down in a multi-stack series

MIP/MPR

Shortcut	Function
Click and Drag	Scroll
ALT-Mouse Wheel	Zoom
ALT-click and Drag	Auto Scroll
CTRL-click	Triangulate
E	Toggle extents
S	Toggle slabbing
K	Render Mode
C	Reset pan and zoom in current view
D	Reset pan and zoom in all views
1-0	Window/Level presets (all modalities except NM and PT)
PERIOD	Color palette presets (NM and PT modalities)
I	Invert intensities
T	Invert intensities
LEFT ARROW	Scroll up
RIGHT ARROW	Scroll down
UP ARROW	Scroll up
DOWN ARROW	Scroll down

3D

Shortcut	Function
Click and Drag	Rotate
ALT-Mouse Wheel	Rotate about horizontal axis
L	Left Lateral view
R	Right Lateral view
P	Posterior view
A	Anterior view
S	Superior view
I	Inferior view
T	Invert intensities
G	Reset clipping panes
O	Toggle lens tool
C	Toggle clipping planes
X	Enable scalpel
Z	Undo scalpel
LEFT ARROW	Rotate left about the vertical axis
RIGHT ARROW	Rotate right about the vertical axis
UP ARROW	Rotate up about the horizontal axis
DOWN ARROW	Rotate down about the horizontal axis

DEFAULT PRESETS

The tables below list the default presets. However, system administrators may have configured different presets for your application.

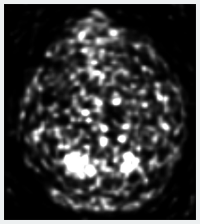
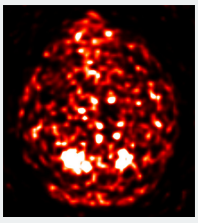
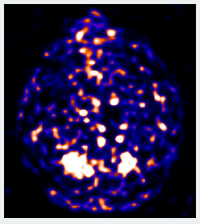
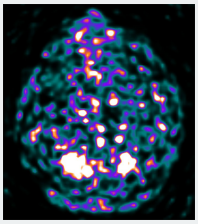
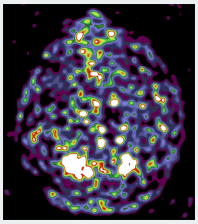
Default presets in 2D and MIP/MPR view modes

In 2D and MIP/MPR view modes, color palette presets are available for NM and PT modalities, and window/level presets are available for all other modalities.

Window/Level presets

Keyboard shortcut	Preset	Window width	Window level
1	Body Soft Tissue	350	50
2	Body Lung	1600	(-)500
3	Body Bone	1500	300
4	Body Liver	200	60
5	Head Post Fossa	200	40
6	Head Mid Brain	80	40
7	Head Blood	700	80
8	Head Bone	4000	600
9	Head IAC	3200	250
0	CTA MIP	700	250

Color presets

Grayscale (default)	HotIron	HotMetalBlue	PET	PET20Step
				

Default presets in 3D view mode

Presets in 3D view mode are achieved by applying different colors to one or more virtual "materials", to more effectively visualize the different tissues. The presets that are provided by default are as follows:

Default Color Preset
BoneGhost
CT Airway
CT Airways and Surface
CT Bone and Tendons
CT Lung Solid
CT MIP and 3D Lung
CT Ortho
CT Solid Airway Surface
CT Colon Virtual Pink Endo
CTA Lower Leg
CTA with skin
CTA
Inverted BoneGhost
MR Brain
MR Carotid

INTELLIGENT LAYOUTS

By default, the application will automatically load images in the optimal layout based on the device screen size, modality, and number of series in the study. The default layouts are summarized in the table below.

Where applicable in the table below, the images will display either side-by-side (1x2 layout) or top-bottom (2x1 layout), depending on device orientation.

Device Screen Size	Modality	Default Layout
Phone	All modalites	1x1
Small or medium tablet (screen up to 10.5")	Videos	1x1
Small or medium tablet (screen up to 10.5")	CR, DX, MG	1x2 or 2x1
Small or medium tablet (screen up to 10.5")	All other DICOM modalities and non-DICOM objects	1x2 or 2x1
Laptop, single monitor, or large tablet (screen 10.5" or greater)	Videos	1x1
Laptop, single monitor, or large tablet (screen 10.5" or greater)	CR, DX, MG	1x2 or 2x1
Laptop, single monitor, or large tablet (screen 10.5" or greater)	All other DICOM modalities and non-DICOM objects	2x2
Multi-monitor	Videos	1x1
Multi-monitor	CR, DX, MG	1x2 or 2x1 (each monitor)
Multi-monitor	All other DICOM modalities and non-DICOM objects	2x2 (each monitor)