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2020/03/10

SYNAPSE®
mobility

Synapse Mobility V. 7.1.3 User Guide

for iOS

Confidential and Proprietary Information

FUJIFILM Medical Systems U.S.A., Inc.

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Synapse® Mobility 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.

You interact with the server-based application using a native iOS app that runs on your Apple mobile device.

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

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.

About this Release

Product: Synapse® Mobility

Client Interface: native iOS app

Version: 7.1.3

Date of Last Document Update: 2020/03/10

Based on the server settings chosen, this configuration of the product is applicable for all regions, but for demonstration and evaluation purposes only.

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.

Screenshots are for visual reference only.

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Revisions

Rev A, 2020/03/10	Initial release of 7.1.3 user guide

Indications for Use and Regulatory Status

Product: Synapse® Mobility

Version: 7.1.3

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

The server is configured in demonstration mode or with an invalid combination of regulatory/language settings and should be used for demonstration or evaluation purposes only.

Manufacturer, Distributor, and EU Importer

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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 Operating Systems**).

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.

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**.

Screen size and resolution

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

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.

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.

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.

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.

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 a VPN connection to a hospital or healthcare institute's network. See the **Privacy notice**.

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.

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.
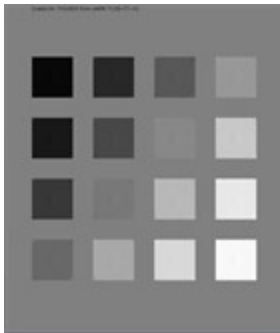
TG18-CT

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.
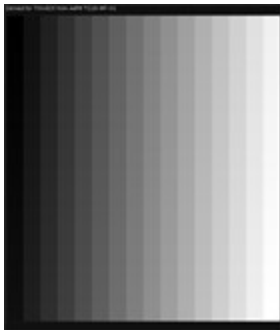
TG18-MP

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.

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 on iOS devices:

1. Set your device's display to maximum brightness and disable auto-brightness.
2. Tap **Help**.
3. Tap **Light Test** .
4. Tap **Perform Light Test**.

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

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.

Getting Started

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

Prerequisites

Obtain the following information from your system administrator:

- Your login credentials to the Synapse Mobility server.
- The IP address/hostname and the port number of the Synapse Mobility server (you'll need to enter this information in the settings when you configure the app).
- Whether SSL is being used (if it is, this will also need to be indicated in the app's settings).

To download the app, you'll need access to the internet, and an account with Apple's App Store.

To connect to the server over WiFi, you'll need to authenticate your mobile device on the WiFi network.

Installing the App

The app should be installed on a validated device. See **Supported Mobile Devices and Operating Systems**.

1. Download and install the Synapse Mobility app from the App store or from iTunes.
2. Configure the Synapse Mobility server as described in **Configuring the Server**.
3. Review the app's settings and adjust if needed. See **Configuring the App**.

Verifying the Installation

If you can launch the app, successfully connect to the Synapse Mobility server and interact with the search interface, you're all set. Otherwise, contact your system administrator.

Exploring the Interface

Once your app is up and running, you can explore the solution's three main components.

Response time will vary depending on your data connection. If you'd like to know more, see **Expected Performance**.

User Interface Feature	Description
The Search Interface	The search interface is the first view you will see after you log in to the Synapse Mobility solution. You use the search interface to search for studies. See **About the Search Interface**.
The Viewer	The viewer displays images and series from the studies and provides access to tools for interacting with the data in 2D, MIP/MPR and 3D view modes. See **About the Viewer**.
The collaboration features	The collaboration features enable you to share the current viewing session with other users, and provide audio/video conferencing. See **About Collaboration**.

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 **Logout** from the menu.

Getting Help

Information is available by selecting **Help** from the menu, which also includes this user guide, Ambient Light User Assessment ("Light Test"), and the indications for use. To learn more about how to perform a light test on your mobile device, see **Your Reading Environment**.

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.

Supported Mobile Devices and Operating Systems

The Synapse® Mobility iOS client is accessed through an application that you must download and install on your mobile device. See **Getting Started**.

The following mobile devices running iOS 12 or 13 are validated for use with Synapse Mobility:

- iPhone 5S*, iPhone 6*, iPhone 6 Plus*, iPhone 6S, iPhone 7, iPhone 7 Plus, iPhone 8, iPhone X
- iPad Air*, iPad Air 2, iPad Mini (2 generation)*, iPad Mini (3 generation)*, iPad Mini (4 generation), iPad (5 generation), iPad (6 generation), iPad Pro (9.7"), iPad Pro (10.5"), iPad Pro (12.9"), iPad Pro 2 generation (12.9")

*iOS 12 only.

Configuring the Server

On first load, the app will prompt you to add a server.

This is a necessary step to establish the connection with the Synapse® Mobility server.

To add a server, perform the following three tasks as described below:

1. Display the server list
2. Add a server
3. Edit the server's settings

To display the server list

1. Go to the app's settings on your device, and enable **Prompt for Server**.
2. Launch the app.

    This should automatically display the server list. If not, from the search interface, select Cancel.

From the server list, you can edit and add servers as well as set the default server.

To add a server

1. Display the server list.
2. Tap **+** .
3. Fill in the server information.
4. Tap **Done**.

To edit a server's settings

1. Display the server list.
2. Tap **Edit**.
3. Tap the server you want to edit.
4. Edit the server information. See the **Server Settings** table below for a list of options that you can configure from here.
5. Tap **Done**.

To set a default server

1. Display the server list.
2. Tap **Set Default Server**.
3. Tap the server you wish to set as default.

To delete a server

1. Tap **Edit**.
2. Tap the **-** tool to the left of the server you wish to delete in the server list.
3. Tap **Delete**.

Server Settings

Setting	Description
Server Name	User-selected "friendly" name provided by your system administrator.
Address	Server address and port number.
Secure Connection	Ask your system administrator if you will be using a secure connection.

Configuring the App

You can configure the app in iPhone Settings. The app appears in the list as Synapse Mobility.

Application Settings

Setting	Description
Microphone	Allow the app to access the microphone. Enable this setting to use the dictation and audio/video collaboration features.
Siri and Search	Allow information from the app to appear in searches.
Version	Version number for the app.
Prompt for Server	Off by default. The app will access the default

Setting	Description
	server when this setting is off. Enable this setting to be prompted for servers every time you launch the app.
Show Demo Servers	On by default. Populates the server list with demo servers. Turn off to use other servers.
Show Thumbnails	Display thumbnail images in the worklist.
Username	Your Nuance Dictation username (required to use dictation).
Advanced Settings	The settings in this section are intended for system administrators. They can be used to enable the display of the console log, and to view the server version.

Expected Performance

Due to performance characteristics of remote and shared wireless data connections, you may experience variable response times to searches and image interaction requests.

The Synapse® Mobility software does not require full DICOM images to be downloaded to your mobile/desktop viewing device as studies/datasets are transferred between the PACS/VNA and the Synapse Mobility server within the hospital network. The delivery of rendered images from the server to devices over wireless networks will vary somewhat over different network types depending on bandwidth availability (i.e. raw speed of the network, either Wi-Fi or 3G cellular, and network latency, i.e. inherent delays on the network). In any case, we have observed that once communication is established to the server, typical data sets are fully loaded on the server and available for initial viewing on the mobile device in 8 to 15 seconds.

The following table characterizes the loading time in seconds for a "small" (38-slice, ~19MB) and "medium" (426-slice, ~213MB) CT data sets under 3 network conditions: Wi-Fi, "Good" 3G and "Poor" 3G. 2 to 3 bars signal strength is considered "Poor" 3G connection. The loading times are calculated by averaging the time taken by 3 consecutive loads of the data set.

Data Set	Wi-Fi	"Good" 3G	"Poor" 3G
Small (38 slices)	8.3	9.7	13.5
Medium (426 slices)	11.3	13.2	15.0

A progress bar is displayed across the screen as the data set is loading. If the connection is lost during transmission, an error message is displayed.

About the Search Interface

The search interface is the first view you see upon logging in. You use it to search for studies.

Tap **Search** to display the search interface on iPad in portrait orientation.

Within the search interface, you can perform a search for studies using the search fields, by modality and by date. You can choose from a list of additional modalities using the Modality Options Tool ⚫⚫⚫ and additional dates using the Calendar Tool 📅. Once you have identified your search criteria, you can execute the search by tapping **Search**.

Multi-PACS functionality queries multiple PACS systems and integrates the query results together into a single unified worklist.

Performing Searches

The search interface supports the following search criteria:

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

You can narrow your search to a modality. By default, the search interface displays three modalities, but this is configurable. See **Configuring Modalities**.

You may also be able to choose which archives to search. See **Selecting Archives**.

To perform a search

1. Enter one or more search criteria.
2. Tap **Search**.

If the search returns a VIP patient dataset, you must be an authorized viewer to see the search results. If you are not an authorized user, you will be redirected to an external VIP authorization service to request access.

To narrow your search

After entering the patient name, but before clicking Search, you can narrow your search by date:

- Use the **Date Within Last** field enables you to restrict your search using preset date ranges.

  The **Date within last** field shows all results from midnight of the last day (e.g. 1d shows all results since midnight of the current day).

- Use the calendar tool to specify a custom date range. You will be prompted for a start date and an end date.

To toggle thumbnails

1. At the Home screen, tap to open the Settings app.
2. Tap Synapse Mobility.
3. Tap to toggle thumbnail images **ON** or **OFF**.

To reset a search

- Tap the **Reset** tool .

Configuring Modalities

You can choose up to five different modalities to be visible in the search interface.

To choose modalities

1. In the Search Interface, tap the **Modality Options** tool ••• .
2. Toggle selected modalities by tapping them.
3. Reorder the modalities (by dragging from the handles ≡) up and down the list.
4. Tap **Close**.

Selecting Archives

If you have access to multiple archives, you can choose which archives to search.

To select archives

1. Tap **Archives** ••• .
2. Tap to toggle preferred archives in the archive list.
3. Tap **Close**.

The Archives field in the search interface indicates the number of active archives.

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.

Once you have loaded studies, you can use the study tray to quickly view the series for the currently open study and to access previously loaded studies. See **Using the Study Tray**.

Drilling Down the Results of a Search

The search results will be organized by study.

Each entry in the search results will display a summary of the study's information (patient name, ID, sex 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.

To sort results

- Tap 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.

If the system administrator has enabled auto-loading, you will not be able to expand a study from the search results list, since selecting a study will automatically load its first series in the image viewer. However, you will still be able to view the content of the study after it has been loaded. See **Using the Study Tray**.

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

To expand a study

- Tap the desired study in the search results.

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

Type of Content	Description
Series	Series are how the DICOM model organizes images, based on modality and timestamp. A series can

Type of Content	Description
	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.
Restricted exams	If the selected study is a restricted exam, you will be prompted to re-authenticate and provide a reason for accessing it.
Sensitive images	If the selected study contains sensitive images, you will be asked to check your work environment before accessing it.

Type of Content	Description
Reports PDF	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.

Loading Data

Once you know which image or report you'd like to view, you can load this data directly in the image viewer.

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.

To load data

- Tap the desired entry (series, report, and so on).

  If there is more than one stack in the series, you will be presented with a stack list from which you must choose before proceeding.

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. It will appear under the search results or below the list of related studies, depending on the type of search you last performed.

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.

Returning to the Search Interface

You must return to the search interface if you wish to perform another search.

To perform another search

- Tap the **Search** tool .

Using the Study Tray

The study tray provides access to series, studies, and the search interface. You can also access previously loaded studies from the study tray.

To show/hide the study tray

- Tap the **Study Tray Tool** .

The study tray contains the series list for the currently open study.

To navigate to the search results

1. Show the study tray.
2. Tap the **Studies** button.

About the Viewer

The viewer displays images and data, and provides tools for interacting with these images and data in various view modes. Some viewer features are only available in specific view modes.

The viewer consists of a main view, where you can see the image currently selected, as well as interface elements that give you access to additional features. See **Overview of the Viewer's Features**.

View Modes

There are three different modes to view data — 2D, MIP/MPR, and 3D.

The 2D view mode displays data in a two-dimensional format, the 3D view mode displays data in a three-dimensional format, and MIP/MPR view mode enables you to display data simultaneously in different orientations.

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

To switch to the 2D View Mode

1. Tap the **Menu Tool** ⦙⦙⦙.
2. Select a view mode.

Data Information

Please be aware of the following information regarding the data.

GSPS and CSPS

Some data sets may contain measurements and annotations saved from another viewing system as GSPS (Greyscale Softcopy Presentation State) or CSPS (Color Softcopy Presentation State) information. GSPS and/or CSPS objects, when avaiable, are displayed by default.

To toggle GSPS display

- In the menu, you will see either the option **GSPS On** or **GSPS Off**, depending on whether the display of this data is currently enabled or not. Tap this option to toggle the display on or off as needed.

Unsupported Data

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.

Source Image Compression

A persistent indication appears in all views if source images are compressed. In 2D view mode, the compression ratio is also displayed.

Key Image Series

Studies containing key images (images of particular interest) appear in the worklist as a large key preview icon. Series that contain key images are marked with small key symbols beside the series name.

Overview of the Viewer's Features

The viewer consists of a main view, where you can see the image currently selected. This view also contains a menu that gives you access to additional features.

The Menu

Once you have opened a data set, you can perform various functions (like changing views and selecting a layout) using the menu. The menu options available depend on the screen you are currently on and the task you are currently performing.

To display the menu

- Tap the **Menu Tool** ⠿.

To hide the menu

- Tap anywhere outside of the menu.

To select an option from the menu

1. Display the menu.
2. Select the desired option from the menu.

Navigating Images

The following table describes the touchscreen interactions for manipulating views in all view modes.

Functionality	Touchscreen Interaction
Window/Level	Tap, then drag See also **Applying Presets**
Panning	Drag with two fingers
Zooming	Pinch
Reset	Shake

There are also methods to navigate in the viewer that apply only to certain view modes. See **About 2D View Mode**, **About the 3D View**, and **About MIP/MPR View Mode**.

Configuring Metadata Display

In 2D and MIP/MPR view modes, you can configure the desired level of metadata displayed in the image viewer.

To configure metadata display

- Tap the **Metadata Display** option in the menu until you see the icon that represents the desired level of metadata detail:

  - None

  - Limited

  - Full

Displaying Related Studies

When you retrieve related studies, any studies with the same Patient ID as the study you are viewing will appear in the study tray. This is useful when choosing series to display in split view layouts. See **Changing Layouts**.

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

To retrieve related studies

- Select **Related Studies** at the bottom of the search results list.

Working with Measurements

The software provides measurement functionality.

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.

Measurement Mode

The measurement mode provides several tools to perform various measurements in 2D view mode such as pixel values, object size and angles.

Slice scrolling and window/level adjustment are disabled in measurement mode.

To enter measurement mode

- Select **Measure** from the menu.

To exit measurement mode

- Tap **Done**.

Measurement Tools

The following measurement tools are available in the 2D view mode.

Measurement Tool		Description
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

Measurement Tool		Description
Angle		Measures the angle between definable segments
Cobb Angle		Measures the Cobb angle between definable segments

Making Measurements

To make linear measurements

1. Tap to select the **Linear** measurement tool.
2. Drag your finger over the image and use the magnified view to precisely position the first endpoint of the measurement. The first endpoint will be placed when you stop moving your finger.
3. Drag your finger to the second endpoint of the measurement. The second endpoint will be placed when you take your finger off the screen.

To make ROI measurements

1. Tap to select the **ROI** measurement tool.
2. Drag your finger over the image and use the magnified view to precisely position the first corner of the ROI. The corner will be placed when you stop moving your finger.
3. Drag your finger to the opposing corner of the ROI. The corner will be placed when you take your finger off the screen.

To make point measurements

1. Tap to select the **Point** measurement tool.
2. Drag your finger over the image and use the magnified view to precisely position the first corner of the ROI. The point will be placed when you stop moving your finger.

To make angle measurements

1. Tap to select the **Angle** measurement tool.
2. Drag your finger over the image and use the magnified view to precisely position the vertex of the angle. The vertex will be placed when you stop moving your finger.

3. Select and move the handles to adjust the angle as required. (See **Working with Measurements**)

To make Cobb angle measurements

1. Select **Cobb** from the measurement panel.
2. Drag your finger to define the first line. (See **To make linear measurements**)
3. Drag your finger to define the second line.
4. Drag the endpoints to adjust the angle as required. (See **Manipulating Measurements**)

Measurement Calipers

Measurement calipers are visible in the 2D and MIP/MPR views. The calipers are a series of marks indicating millimeters or centimeters, depending on the current zoom factor of the image. The spacing of the calipers will adapt to the zoom factor of the image so that measurements are always accurate.
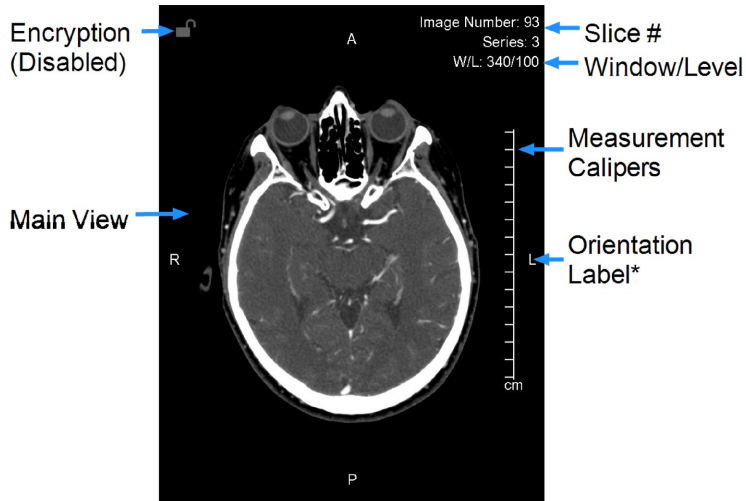
Manipulating Measurements

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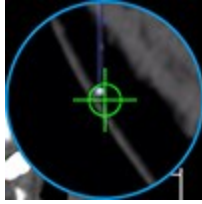
To select a measurement

- Drag your finger over the image and use the magnified view to position the red cross hairs over an endpoint or label. The cross hairs will turn yellow when they are within range of a selectable element. Hold the yellow cross hairs over the endpoint or label until they turn green (selected).

No endpoint selected (red)
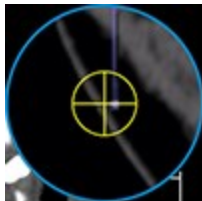
Endpoint in selectable range (yellow)

 Selected endpoint (green)

To move a measurement

1. Select an endpoint or label using the above procedure. Do not take your finger off the screen.
2. Drag the now-selected endpoint or label with the green cross hairs to the desired location and take your finger off the screen.

To delete a measurement

1. Select an endpoint or label using the above procedure.
2. Tap the **Delete** tool .

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. See **Navigating Images**.

To select a preset

1. Select **Presets** from the menu.
2. Select the desired preset.

The presets for Window/Level are as follows:

Preset	Window Width	Window Level
Body Soft Tissue	350	50
Body Lung	1600	(-)500
Body Bone	1500	300
Body Liver	200	60
Head Post Fossa	200	40
Head Mid Brain	80	40
Head Blood	700	80
Head Bone	4000	600
Head IAC	3200	250
CTA MIP	700	250

Adjusting Image Quality

Depending on the quality of your network connection, you may want to 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 **JPEG Quality** from the menu.
2. Adjust the quality sliders.

Using Dictation

The Synapse® Mobility solution provides the ability to dictate a report while viewing studies. The Synapse Mobility software currently supports Nuance Dictation.

Dictation requires microphone access, a Nuance Dictation account and the username and password for the Nuance dictation service. Be sure to correctly configure these settings before using dictation. (See **Configuring the App**)

To enable dictation

- Select **Dictation** from the menu and begin speaking. The **Dictation** tool 🎤 will appear above the view.

To pause and resume dictation

1. Tap the **Dictation** tool to pause dictation. The **Dictation** tool will flash when dictation is paused.
2. Tap the **Dictation** tool again to resume dictation.

To view the report

- Tap and hold the **Dictation** tool to open the report.

You can edit the report with the keyboard.

To submit the report

- Tap **Submit**. The report will be saved to PACS with the original study as a structured report (DICOM SR).

To delete the report

- While viewing the report, tap the **Delete** tool 🗑 .

The **Dictation** tool will disappear from above the view when you submit or delete the report.

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 menu.

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.
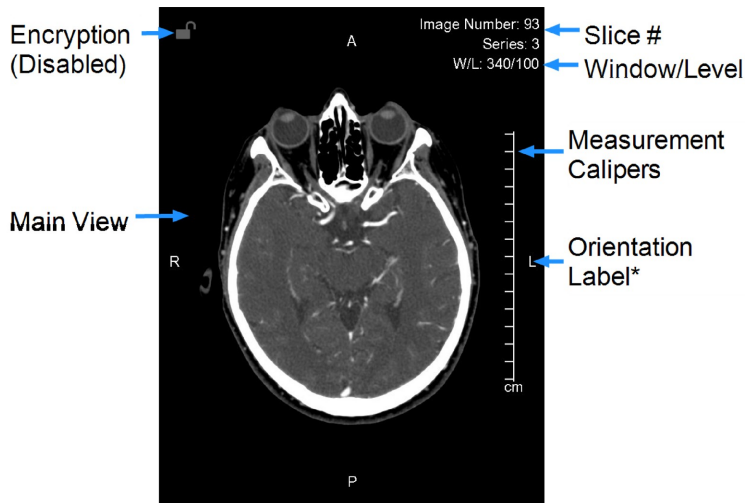
Only one study can be shared at a time.

About 2D View Mode

Once a study and its series are selected for viewing, its contents (data sets) are automatically listed and displayed in 2D view mode.

In this mode, you can interact with images in a two-dimensional format.

A small key symbol on the left side in the main view indicates a key image.

Patient orientation (superior, inferior, anterior, posterior, left, or right) is indicated using letters at the edges of the image.

The letters displayed as orientation labels 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).

All of the methods of navigating the data described in **Navigating Images** apply in 2D view mode. In addition to those interactions, you can go to the next/previous image stack by swiping left or right.

Scrolling Through Images

In 2D view mode, you can scroll through images manually or by using cine mode.

Scrolling Manually

- To scroll through several images, drag up/down
- To scroll through single images, tap near the top or bottom of the view

Using Cine

Cine mode automatically scrolls through images once all are loaded at the current window/level and zoom settings.

To enter cine mode

- Select **Cine** from the menu.

To start scrolling

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

To reverse scrolling

- Tap **FPS**.
- Enable the option **Playback Reversed**.

To pause scrolling

- Tap **Pause**.

Changing Layouts

If your device has a sufficiently large screen (which is the case for most tablets, with the exception of those with screens smaller than 10.5" such as iPad Minis), you can view two images simultaneously. This feature is called Split View, and can be very useful for comparing images.

In Split View mode, the images will display either side-by-side (1x2 layout) or top-bottom (2x1 layout), depending on device orientation.

Split View is not available on phones, due to the limited screen space.
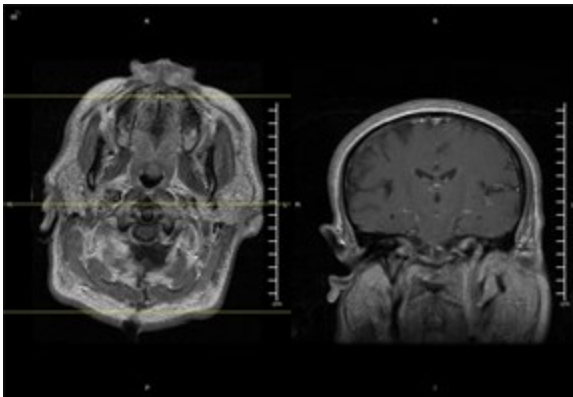
You can change the layout at any time.

To toggle the layout

- When in single view mode, select **Split View** from the menu to change to split view.
- When in split view mode, select **Single View** from the menu to change to single view.

When changing from a single view to a split view, the currently loaded series will appear in a view position and you will need to assign another series to the empty view position.

To assign a series to a view position

1. Open the study tray and navigate to your desired series.
2. Tap to select the series. The app will display a selector for view positions, select whether you want the series to appear at the top or the bottom of the split view.

You can always load and assign new series to view positions of your choice by selecting them from the study contents.

Yellow reference lines appear when viewing and interacting with orthogonal reconstructions in other views.

Reference lines are to be used for clinical reference only.

Linked Scrolling

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

Typically, you would scroll by slice position. But if the data set does not contain slice position information, you have the option to scroll by slice number.

To link scrolling by slice position

1. Select **Linked Off Position** from the menu.

The label will change to "Link On Position", which confirms linked scrolling by slice position is now enabled.

### To link scrolling by slice number

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. Select **Linked Off Number** from the menu.

The label will change to "Link On Number", which confirms linked scrolling by slice number is now enabled.

About the 3D View

In 3D view mode, you can interact with images in a three-dimensional format.
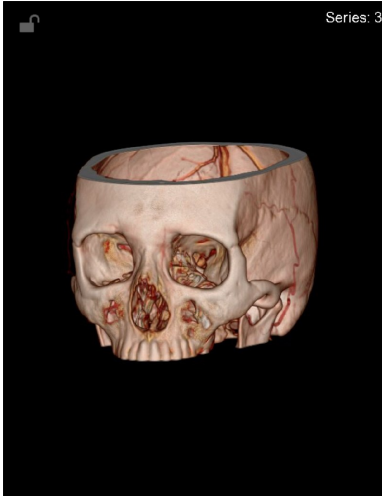
All of the methods of navigating the data described in **Navigating Images** apply in 3D view mode. In addition to those interactions, you can you can rotate the image by dragging your finger on the screen.

Magnifying Part of a Volume

On iPad tablets, you can use the lens tool to magnify a select 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.
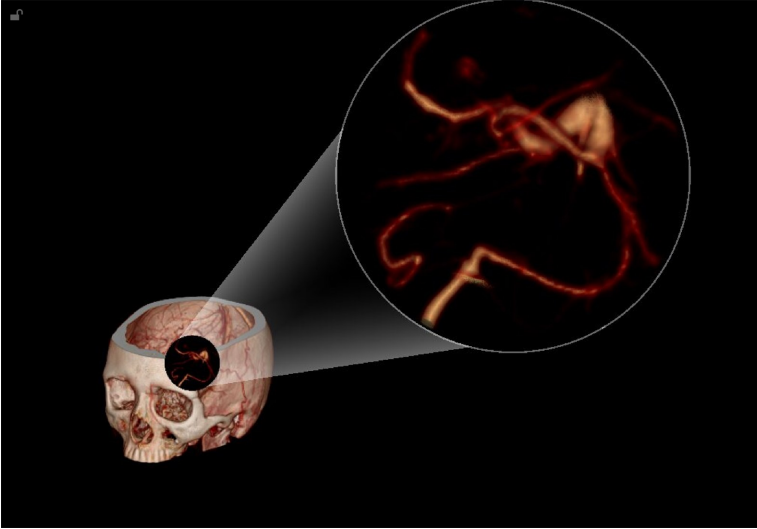
To enable the lens tool

- Select **Lens** from the menu.

The lens tool is only available in 3D View Mode.

To move the lens over the volume

- Drag the lens.

To adjust the magnification of the lens view

- Pinch or spread two fingers on the magnified view.

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. See **Navigating Images**.

To select a preset

1. Select **Presets** from the menu.
2. Select the desired preset.

The presets for Window/Level are as follows:

Preset	Window Width	Window Level
Body Soft Tissue	350	50
Body Lung	1600	(-)500
Body Bone	1500	300
Body Liver	200	60
Head Post Fossa	200	40
Head Mid Brain	80	40
Head Blood	700	80
Head Bone	4000	600
Head IAC	3200	250
CTA MIP	700	250

About MIP/MPR View Mode

In MIP/MPR mode, you can interact with images and display them in different orientations.
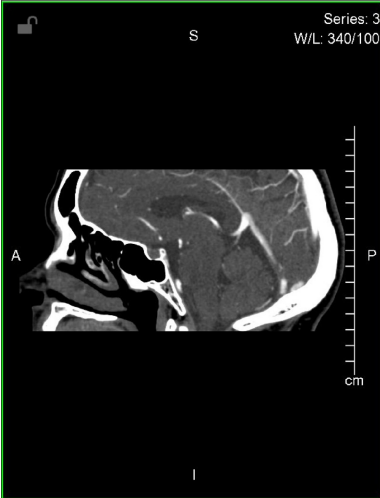
All of the methods of navigating the data described in **Navigating Images** apply in MIP/MPR mode. In addition to those interactions, you can change slab thickness and orthogonal view.

To change thickness

1. When in MIP/MPR view mode, select **Slab Thickness** from the menu.
2. Select the desired thickness.

To change orthogonal view

- Swipe left or right in the main view.

Scrolling Through Images

In MIP/MPR view mode, you can scroll through images manually.

- To scroll through several images, drag up/down.
- To scroll through single images, tap in the top or bottom third of the screen.

About Collaboration

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.

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

Hosting Sessions

The host controls the layout and permissions for all participants of the collaboration session.

The Collaboration panel contains all the permissions and status of the participants in the session.

To invite a user to a session via email

1. Select **Collaboration** from the menu.
2. Click **+**. This will create a message in your default email client.
3. Enter the recipient's email address in the **To:** field of the message.
4. Send the message.

The list of participants will be visible in the Collaboration panel. Participants will be able to see all your interactions with the image view as long as the session is active.

The host can grant permission for participants to interact with the session.

To grant or revoke a participant's ability to interact with the session

- Tap the **Interaction Tool** in the Collaboration panel.

The host and participants can see each others uniquely colored cursors if they are enabled by the host.

To show or hide the host's or participant's cursor

- Tap the **Cursor Tool** ⤵ in the Collaboration panel. The participant's cursor will be the same color as the square next to the participant's name.

To use your cursor as a pointer without interacting with the image

- Toggle the **Pointer Tool** ⤵ by tapping it. (The tool changes to 🖑 when enabled.)

Confidential patient information is hidden by default.

To remove a participant from the session

1. Swipe horizontally across the participant's name in the Collaboration panel.
2. Tap **Remove**.

Joining Sessions

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

To join a collaboration session

1. Click or tap 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.

If the host has already loaded images, participants will see the image view and the host's mouse cursor. If the host is in the search interface, participants will see an empty image view and a message that the host is not currently viewing images. Participants can interact with the view if the host grants them the ability.

The aspect ratio seen by participants is determined by the host's own display.

Collaborating with Audio/Video

While collaborating, it is possible to communicate with a participant in a real-time audio/video (A/V) session.

To initiate an A/V session

- From the collaboration panel, tap the **Audio/Video** tool to request an A/V session. Once the session is initiated, participants may click or tap the audio/video button to broadcast from their device.

To resize an A/V window

- Tap the **Resize** button to toggle between window sizes.

You can adjust the opacity of obtrusive or distracting A/V windows.

To adjust the opacity of an A/V window

- Drag along the bottom edge of the window.