

IntelliSpace PACS 4.4 Radiology with iSyntax User Guide

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1 Introduction

About the IntelliSpace PACS 4.4 Radiology

IntelliSpace PACS 4.4 Radiology is a diagnostic tool for Radiologists and Radiology Residents that provides diagnostic images and clinical patient information on a navigational console and up to four diagnostic monitors. This configuration of a Radiologist Operating Panel (ROP) and up to four diagnostic monitors is referred to as an IntelliSpace PACS 4.4 Radiology Workstation. Because all navigational and contextual information is displayed on the Navigational Console, the diagnostic monitors are reserved for the display of diagnostic images. The diagnostic monitors provide the maximum amount of available image-viewing space for diagnosis.

IntelliSpace PACS 4.4 Radiology supports the modalities that comply with the Philips IntelliSpace PACS DICOM Conformance Statement. IntelliSpace PACS 4.4 Radiology allows you to interrogate and manipulate diagnostic images in many ways. You can zoom, pan, adjust window width and level, measure, annotate, invert, flip, rotate, sort series order, display in multi-image mode, copy, save, and print diagnostic images.

IntelliSpace PACS 4.4 Radiology works with IntelliSpace PACS 4.4 Enterprise and iVault to provide Radiologists with access to all necessary prior exams as well as to provide the entire enterprise of referring physicians and specialists with access to Radiologists' diagnostic reports and presentation states. Additionally, the iExport feature allows Radiologists to export DICOM exams to other DICOM devices, such as a 3D-imaging device.

Like IntelliSpace PACS 4.4 Enterprise, IntelliSpace PACS 4.4 Radiology can communicate with your institution's HIS/RIS (Hospital Information System/Radiology Information System). This allows IntelliSpace PACS 4.4 Radiology to receive all necessary patient information, and display reports and other patient-related information.



WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



WARNING

Do not use portable devices such as smart phones or iPads (tablet PCs) for diagnostic purposes.

About the Instructions for Use

This *Instructions for Use* is intended to assist users in the safe and effective use of the Philips software product described. The "user" is considered to be not only the body with authority over the software product but also those persons who use the software product.

This *Instructions for Use* does not describe the use of the IT equipment on which the Philips software product is installed. Refer to the documentation of the IT equipment concerned.

Before attempting to use this software product, you must read this *Instructions for Use* thoroughly, paying particular attention to all **WARNINGS**, **Cautions**, and **Notes** it contains. You must pay special attention to all the information given, and procedures described, in the chapter "Safety". In addition you must pay special attention to On-screen Messages and ONLINE HELP information containing **WARNINGS**, **Cautions**, and **Notes** that may be related to the function being executed.

**WARNING**

WARNINGS are directions which if not followed could cause fatal or serious injury to a user, patient or other person, or could lead to clinical misdiagnosis, misinterpretation, and/or loss or damage of patient-related data.

Cautions are directions which if not followed could cause damage to the IT equipment on which the software product is installed and/or other equipment or goods, and/or cause environmental pollution.

NOTE

Notes are intended to highlight points of attention as an aid to users.

This *Instructions for Use* and the ONLINE HELP describe the most extensive configuration of the software product, with the maximum number of options. Not every function described may be available.

**WARNING**

The chapter "Safety" deals with safety aspects and should be read first, before operating this software product.

NOTE

The screen shots in the Instructions for Use can differ from the user interface screens on details.

Usage of the Product

This Philips software product is intended to be installed and used only in accordance with the safety procedures and instructions given in this Instructions for Use and for the purpose for which it was designed.

The purpose for which the software product is intended is given below. However, nothing stated in this Instructions for Use reduces users' responsibilities for sound clinical judgment and best clinical procedure.

Installation and use of this software product is subject to the law in the jurisdiction in which it is being used. Users must **only** install and/or use the software product in such ways as do not conflict with applicable laws, or regulations which have the force of law.

Use of the software product for purposes other than those intended and expressly stated by the Manufacturer, as well as incorrect use, may relieve the Manufacturer (or his agent) from all or some responsibility for resultant non-compliance, damage or injury.

Patient diagnosis should not be based solely on results provided by a single data source to IntelliSpace PACS 4.4 Radiology. Corroboration of clinical results from a variety of procedures should be utilized.

Intended Use

IntelliSpace PACS 4.4 is an image management system intended to be used by trained professionals, including but not limited to physicians, nurses and medical technicians.

The system is a software package used with general purpose computing hardware to acquire, store, distribute, process and display images and associated data throughout a clinical environment. The software performs digital image processing, measurement, communication and storage.

IntelliSpace PACS 4.4 supports receiving, sending, printing, storing and displaying studies received from the following modality types via DICOM: CT, MR, NM, US, XA, PET, DX, DR, RF, RT, MG, SC, VL, as well as hospital/radiology information systems.

Indications for Use

IntelliSpace PACS 4.4 is an image management system intended to be used by trained professionals, including but not limited to physicians, nurses and medical technicians.

Lossy compressed mammographic images and digitized screen images must not be reviewed for primary image interpretations.

Mammographic images may only be interpreted using an FDA approved monitor that offers at least 5 Mega pixel resolution and meets other technical specifications reviewed and accepted by FDA.

Contraindications

None

Limitation for Use



WARNING

IntelliSpace PACS 4.4 must be operated in an environment where the minimum specified requirements for hardware and network performance are met.



WARNING

IntelliSpace PACS 4.4 can display both lossless and lossy compressed images. Your ability to analyze images depends on the quality of the image data you intend to analyze. Lossy / irreversible compression affects the quality of the image. The user is responsible to ensure that the image has adequate quality for the review purpose.



WARNING

IntelliSpace PACS 4.4 is not intended for diagnostic purposes on mobile devices.

NOTE

In IntelliSpace PACS 4.4 Radiology, the JPEG and Lossy compression indicators (icons) will not be seen on the rack thumbnail windows for the JPEG and Lossy compressed images. But, the indicators will be seen on diagnostic monitor window.

Compatibility

The software product described in this *Instructions for Use* should not be used in combination with other software, equipment or components unless such other software, equipment or components are expressly recognized as compatible by Philips Healthcare. A list of such software, equipment and components is available on request from your local Philips Healthcare Representative, or the Manufacturer. Philips Healthcare is not responsible for running compatibility validation of non-supported third-party software.

Changes and/or additions to the software product should only be carried out by Philips Healthcare or by third parties expressly authorized by Philips Healthcare to do so. Such changes and/or additions must comply with all applicable laws and regulations which have the force of law within the jurisdictions concerned, and with best engineering practice.

Changes and/or additions to the software product that are carried out by persons without the appropriate training may lead to the Philips Healthcare warranty being voided.

Philips is not responsible for any malfunction of IntelliSpace PACS 4.4, if IntelliSpace PACS 4.4 runs on hardware that is not according to hardware specification.

If not supplied by Philips with the IntelliSpace PACS 4.4 software, Philips is not responsible for any malfunction of the hardware used.

Compliance

This software product complies with relevant international and national standards and laws. Information on compliance will be supplied on request by your local Philips Healthcare Representative, or by the Manufacturer.

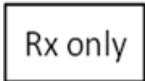
This software product must be installed on appropriate IT equipment that complies with relevant international and national laws and standards on EMC (Electro-Magnetic Compatibility) and Electrical Safety. Such laws and standards define both the permissible electromagnetic emission levels from equipment and its required immunity to electromagnetic interference from external sources.

Symbols Glossary

The following symbols may appear in the product documentation or on the labels attached to the product:

Symbol	Symbol Name	Symbol Description	Standard Number and Name	Symbol Reference Number
	Manufacturer	Indicates the name and address of the manufacturer	ISO 15223-1:2012 ¹	5.1.1
			EN 980:2008 ²	5.12
	Authorized Representative in the European Economic Area (EEA).	Indicates the Authorized Representative, responsible for the device in the European Economic Area (EEA).	ISO 15223-1:2012 ¹	5.1.2
			EN 980:2008 ²	5.13
	Date of manufacture	Indicates the date when the device was manufactured.	ISO 15223-1:2012 ¹	5.1.3
			EN 980:2008 ²	5.6
	Batch code	Indicates the full Software Release/Version number.	ISO 15223-1:2012 ¹	5.1.5
			EN 980:2008 ²	5.4

Symbol	Symbol Name	Symbol Description	Standard Number and Name	Symbol Reference Number
	Catalogue number	Indicates the manufacturer's catalogue number so that the device can be identified	ISO 15223-1:2012 ¹ EN 980:2008 ²	5.1.6 5.10
	Consult instructions for use	Indicates the need for the user to consult the instructions for use.	ISO 15223-1:2012 ¹ EN 980:2008 ²	5.4.3 5.18
	Caution and/or Warning	WARNINGS are directions which if not followed could cause fatal or serious injury to a user, patient or other person, or could lead to clinical misdiagnosis, and/or loss or damage of patient-related data. Also: This symbol is used on the device label to highlight the fact that there are specific warnings or precautions associated with the device, which are not otherwise found on the label.	ISO 15223-1:2012 ¹ EN 980:2008 ²	5.4.4 5.11

Symbol	Symbol Name	Symbol Description	Standard Number and Name	Symbol Reference Number
	CE Marking of Conformity	Product meets the requirements of 93/42/EEC for Medical Devices distributed in the European Economic Area (EEA).	(European) COUNCIL DIRECTIVE 93/42/EEC of 14 June 1993 concerning medical devices	Annex XII
	Prescription Device	Caution: Federal law restricts this device to sale by or on the order of a licensed healthcare practitioner	21 CFR 801.109(b)(1) Prescription Devices	

¹ ISO 15223-1:2012 Medical devices - Symbols to be used with medical devices labels, labeling, and information to be supplied - Part 1: General requirements

² EN 980:2008 Symbols for use in the labeling of medical devices

Training

Users of this software product must have received adequate training on its safe and effective use before attempting to use the software product described in this Instructions for Use.

Training requirements for this type of software product will vary from country to country. It is for users to make sure that they receive adequate training in accordance with local laws or regulations which have the force of law. If you require further information about training in the use of this software product, please contact your local Philips Healthcare representative, or the Manufacturer.

Power Supply

It is advised to use an uninterruptible power supply (UPS), for example, to continue to provide power to the IntelliSpace PACS 4.4 system for a specified time after a power outage, and to allow automatic and controlled shutdown.

Workplace Design

To minimize the risk of computer-related disorders, ensure the workplace is properly designed and provides a good ergonomic working position (e.g., proper working height of chair and desk; screen setup). Observe good working practices; for example, take regular breaks and perform exercises. Alternate work periods at the computer with other kinds of work.

Other Instructions for Use

This *Instructions for Use* relates to the software product IntelliSpace PACS 4.4. However, if other software and/or equipment may be used with the software product, each will have its own Instructions for Use.

Errors in the Information supplied with the Product

If you suspect an error in the information supplied with the software product, for example, in this Instructions for Use, you should report the error to your local Philips Healthcare Representative or the Manufacturer, for analysis and, if applicable, for correction.

About Screen

To display the About Screen that displays labeling and product information, open the application and from the Dashboard, click on "Philips" on the right side of the page.

Software Updates

Updates for this Philips software product can become available. Such updates are essential to keep the software product operating safely, effectively, and reliably.

Accuracy of Measurements

Effect of Image Quality

The accuracy of measurements depends on multiple factors that determine image quality:

- The accuracy of patient positioning and fixation
- Patient motion and organ motion
- The modality type and acquisition protocol, acquisition and reconstruction distortions
- Image resolution: both spatial and contrast resolution

Measuring

The ability to accurately place a measurement control point on an image displayed on a monitor is the major factor that determines the accuracy of measurements. In addition, the image viewing settings in IntelliSpace PACS 4.4 influence measurement accuracy.

Settings such as gray level, window width, zoom and others may affect how users perceive the dimensions of the anatomy displayed on the screen. These settings also influence the accuracy of positioning measurement control points with a mouse pointer.

The clinical user is responsible to judge the accuracy of the measurements based on the image quality and based on the accuracy of placing measurement control points.

When to Use IntelliSpace PACS 4.4 Radiology

This product should be used by a licensed Radiologist or by a non-Radiologist in conjunction with a licensed Radiologist.

This product is intended to be used as a tool to assist in rendering clinical diagnosis. Improper use or configuration of this product may affect accurate clinical diagnosis, adversely impacting patient diagnosis or patient care. All instructions found in the IntelliSpace PACS 4.4 Radiology Placement Guidelines must be followed in order to achieve the proper configuration and correct use of this product. See [“IntelliSpace PACS 4.4 Radiology Placement Guidelines” on page 30.](#)



WARNING

Lossy compressed mammographic images and digitized film screen images must not be reviewed for primary image interpretations. Mammographic images may only be interpreted using a United States Food and Drug Administration (FDA) approved monitor that offers at least 5 megapixel resolution and meets other technical specifications reviewed and accepted by the United States FDA, or the corresponding agency in your country.

Safe Usage Environment for IntelliSpace PACS Radiology



WARNING

- **Make sure that you have a local printer available in order to print directly from the modality, should the system become unavailable.**
- **Make sure that you are using appropriate monitors, and that they are properly configured and calibrated prior to using IntelliSpace PACS 4.4 Radiology.**

Customer equipment for operating the IntelliSpace PACS 4.4 Radiology service must be approved by Philips and must be maintained in accordance with the manufacturer's specifications. In addition, the IntelliSpace PACS Radiology software must be installed on computers in accordance with the IntelliSpace PACS 4.4 Radiology Placement Guidelines. See [“IntelliSpace PACS 4.4 Radiology Placement Guidelines” on page 30.](#)

Before using IntelliSpace PACS 4.4, your computer system must be set up in the proper environment for viewing images.

- Be sure that your computer monitors have been properly configured before using IntelliSpace PACS 4.4 Radiology. To configure your monitors, carefully follow the monitor manufacturer's specifications and/or instructions for monitor calibration. If the monitors used in conjunction with IntelliSpace PACS 4.4 Radiology (navigation console and diagnostic monitors) are not properly calibrated, IntelliSpace PACS 4.4 Radiology has not been properly configured and should not be used.
- IntelliSpace PACS 4.4 Radiology should not be validated in the absence of any diagnostic monitors.

IntelliSpace PACS 4.4 Radiology Placement Guidelines

The following placement guidelines are provided to ensure an optimal environment for the placement and operation of IntelliSpace PACS 4.4. There is a great deal of diversity in the IT and clinical environments in which the IntelliSpace PACS 4.4 will be placed. The items below are meant to serve as general, broad guidelines and should not take the place of a specialized consultation with Philips personnel and/or an ergonomics specialist.

- IntelliSpace PACS 4.4 Radiology should be installed in a dimly lit space, consistent with current clinical reading environments.
- IntelliSpace PACS 4.4 Radiology monitors should not be exposed to direct light of any kind, in order to avoid glare. Particular attention should be given to ensuring that the IntelliSpace PACS 4.4 Radiology monitors are not situated in an area where they would be exposed to light from existing light boxes or other light emitting devices.
- IntelliSpace PACS 4.4 Radiology monitors should be calibrated while in the ambient light conditions where the product will be used. Calibration should be performed following the monitor manufacturer's guidelines.
- IntelliSpace PACS 4.4 Radiology monitors should be installed such that they are not affected by light from another IntelliSpace PACS 4.4 or other workstations. Conversely, IntelliSpace PACS 4.4 Radiology monitors should be set up such that they do not affect another IntelliSpace PACS 4.4 or another diagnostic reading station.
- If IntelliSpace PACS 4.4 Radiology is temporarily unavailable, your institution should provide for an alternative methodology to provide images of sufficient image quality to the physicians.
- To facilitate proper system operation, all computer equipment should be installed in an environment that meets the original manufacturers guidelines.

Failure to follow these guidelines could adversely affect the diagnostic integrity of the images being displayed in IntelliSpace PACS 4.4 Radiology system and your institution's ability to provide imaging services.

The following diagram shows the proper placement of IntelliSpace PACS 4.4 Radiology.

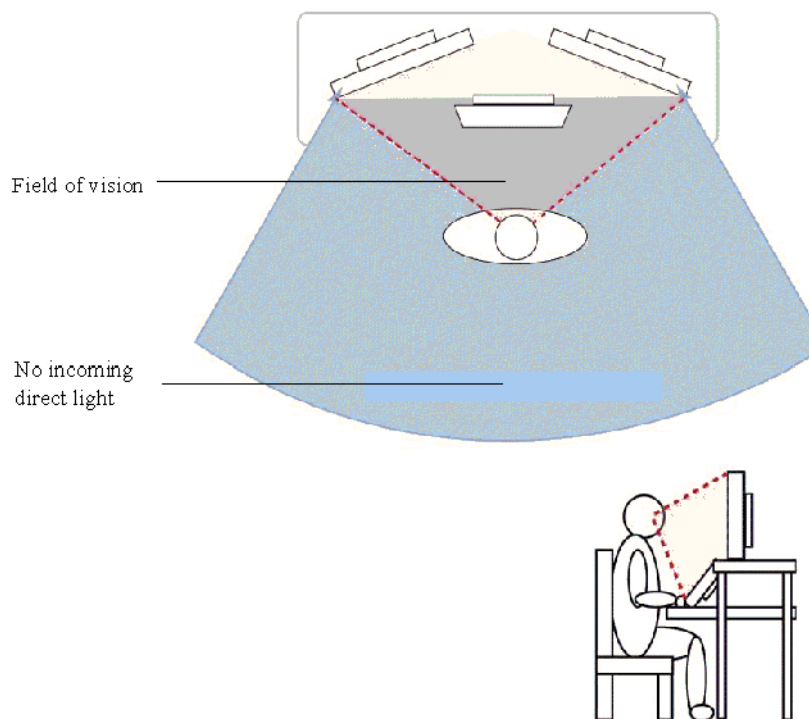


Fig. 1: IntelliSpace PACS Radiology Monitor Placement Guidelines

When Not to Use IntelliSpace PACS 4.4 Radiology



WARNING

Never render a primary diagnosis on images if you are using a monitor that was not certified or calibrated for primary diagnosis purposes.

Do not use this product if:

- You know that the computer system you are using is clearly malfunctioning.
- Your System Administrator tells you not to.
- There is an error or warning message being displayed on the computer system.
- You are aware of any system problems or malfunctions. Always notify your System Administrator of any potential system problems or availability issues as soon as possible.

About This Publication

This publication is part of the IntelliSpace PACS Instructions for Use, which also includes the following other publications:

- IntelliSpace PACS 4.4 Enterprise with iSyntax User Guide
- IntelliSpace PACS 4.4 AdminTool with iSyntax User Guide

This Instructions for Use is intended for clinical and administrative users of IntelliSpace PACS. Anybody in a health care organization who intends to use this product should read this manual carefully. We also recommend that you receive basic product-use training from your System Administrator or from a Philips IntelliSpace PACS applications specialist.

2 Safety

Important Safety Directions

All Philips Healthcare products are designed to meet stringent safety standards. To safeguard human safety this software product requires proper installation, use and maintenance.

It is vital that you read, note, and where applicable strictly observe all DANGER notices and safety markings on the outside of the IT equipment on which this software product has been installed. To help ensure the safety of both patients and users, it is vital that you strictly follow all directions under the heading SAFETY and all WARNINGS and Cautions given throughout this Instructions for Use and/or displayed on the user interface.

You must also note the following information.

Safety Awareness



WARNING

Do not use this software product for any application until you have read, understood and know all the safety information, and safety procedures contained in this SAFETY chapter. Use of this software product without a proper awareness of how to use it safely could lead to fatal or serious injury, clinical misdiagnosis/misinterpretation and/or loss/damage of patient-related data.

Adequate Training



WARNING

Do not use this software product for any application until you have received adequate and proper training in its safe and effective use. If you are unsure of your ability to use this software product safely and effectively DO NOT USE IT. Use without proper and adequate training could lead to fatal or serious personal injury, clinical misdiagnosis/misinterpretation, and/or loss/damage of patient-related data.

For information about training, please refer to [“Training” on page 27](#) in the chapter [“Training” on page 27](#) of this Instructions for Use.

Usage & Compatibility



WARNING

- Do not use this software product for any purpose other than that for which it is intended.

Do not use this software product with any equipment or software other than that which Philips Healthcare recognizes as compatible. Use of this software product for unintended purposes, or with incompatible software and/or equipment, could lead to fatal or serious personal injury, clinical misdiagnosis/misinterpretation, and/or loss/damage of patient related data.

For information about intended use and compatibility, refer to the and sections in the chapter in this Instructions for Use.

Data Security



WARNING

For information about Data Security, please refer to .

Power Off



WARNING

Never switch the IT equipment off using the POWER ON/OFF switch while the software product is still running, as this may damage data integrity, which can lead to loss/damage of patient-related data. Always exit the software product before switching off the IT equipment.

Unsupported Software



WARNING

Do not install unsupported software on the IntelliSpace PACS 4.4 system as this could interfere with diagnosis/interpretation, and/or cause loss of or damage to patient-related data, and/or introduce computer viruses.

Display Settings



WARNING

Hardware Characteristics, resolution settings, and viewing environment all affect the displayed image quality. It is the responsibility of the user to ensure that the displayed image quality is fit for purpose. Incorrect monitor setup can lead to misdiagnosis/misinterpretation. Check the display performance regularly.

Safety Messages



WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



WARNING

Do not use portable devices such as smart phones or iPads (tablet PCs) for diagnostic purposes.



WARNING

- Make sure that you have a local printer available in order to print directly from the modality, should the system become unavailable.
- Make sure that you are using appropriate monitors, and that they are properly configured and calibrated prior to using IntelliSpace PACS 4.4 Radiology.

Please adhere to your site security policy to establish strong passwords and take appropriate measures to secure the network environment to prevent access by unauthorized users and possible modification to patient data.

Each user is assigned a unique User ID and password. This prevents users from sharing the same personal folders, user preferences, and shortcuts and prevents one user from deleting or changing the user preferences and personal folders of other users. You should never share your User ID and password.

**WARNING**

Only authorized diagnostic monitors should be used for a mammo-configured IntelliSpace PACS 4.4 Radiology client.

Never use other monitors to display diagnostic images for a mammo-configured IntelliSpace PACS 4.4 Radiology client.

Philips authorizes the use of the following diagnostic monitors for a mammo-configured IntelliSpace PACS 4.4 Radiology client:

- WIDE 5 mega-pixel (MP) monitor: model IF2105MP
- Barco 5 mega-pixel (MP) monitor: models Coronis 5MP
- Eizo 5 mega-pixel (MP) monitor: model Radiforce 5MP

**WARNING**

- True Size should not be used as a measurement tool, since pixel pitch is often misleading on certain monitors.
- Before making clinical decisions, you must ensure that the proportions of the image are close to real size proportions. Also, you should use the measurement, annotation, and image scale tools available in IntelliSpace PACS 4.4 , rather than using physical rulers or other tools.

**WARNING**

Incorrect Pixel Spacing and Pixel Pitch values affect the accuracy of the True Size feature. Therefore, you should always make sure that the size of the image is as expected when reviewing a True Size zoomed image.

**WARNING**

Issues including delays with image retrieval, delays in Study migration between servers/ locations, and application responsiveness issues (pauses, halting) may be experienced when the PACS Service is used on a network that does not meet the Minimum Network Requirements.

Be aware that remote sites that do not connect directly to the main site and/or that connect with a sub-optimal bandwidth, can cause incomplete transfer of or unavailability of critical data at the time of diagnosis.

**WARNING**

Because of the pervasive use of lossy compression and other image processing methods in the medical industry (such as edge detection), it is at the discretion of the diagnostic viewer to treat these images as diagnostic.

**WARNING**

To enable remote users to use remote reading, your System Administrator should configure Least Cost Routing rules to display studies in full resolution.

**WARNING**

It is the customer's responsibility to make sure patients have unique patient identifiers (MRNs) within a federation.

**WARNING**

After you edit patient-related demographics, the updates are not immediately propagated to other parts of IntelliSpace PACS 4.4 .

**WARNING**

The Merge option has been identified as a hazard area in IntelliSpace PACS 4.4 that could result in an incorrect or delayed diagnosis or delayed treatment. Philips strongly recommends that you visually verify the patient records you want to merge before merging.

**WARNING**

There is no undo function for the patient merge.

**WARNING**

The Delete Patient option has been identified as a hazard area in IntelliSpace PACS 4.4 that could result in no diagnosis or a delayed diagnosis. If done incorrectly, this procedure may affect patient diagnosis and patient care. Therefore, only qualified and thoroughly trained professionals should be given access to this feature. These professionals should be completely aware of the ramifications of deleting a patient record before undertaking this operation. Philips strongly recommends that you back up data if possible and visually verify the patient record before deleting.

**WARNING**

The Restore Color Image feature is configured using DICOM Sources to specify the source and modality type of the study. Please exercise caution when using this feature with scanned-in images.

**WARNING**

Enabling any non-zero deviation can cause alteration of true colors. You should exercise caution when using the Restore Color Image feature and verify the accuracy or display with a phantom. You should also exercise caution with using this feature with scanned-in images.

**WARNING**

Review the configuration before linking or merging patients to make sure the correct patients are linked or merged.

**WARNING**

An incomplete merge may result in insufficient data or images that can result in delayed patient treatment or misdiagnosis. A warning message at the time of a patient merge error will display, indicating that the merge is incomplete and giving the demographics of the two patients being merged. The user is given the option to perform the merge again. The unsuccessful merge will be indicated as “Incomplete” in the audit trail.

The incorrect use of the Delete Exam feature poses serious threats to patient diagnosis and patient care. Therefore, only qualified and thoroughly trained professionals should be given access to this feature. You should take the following precautions when deleting patient exams:

- Regularly backup your system—only data that has been saved to a backup medium can be restored to your database; if you need to restore a patient record that was deleted in error, you will need a backup medium from which to retrieve the erroneously deleted record.
- Visually verify the patient exam before deleting.

**WARNING**

You cannot link exam notes to linked exams. For example, if you link CHESTABDOMEN-PELVIS exams and an exam note is attached to the CHEST exam, this exam note will not be displayed in the worklist and Canvas Page associated with the ABDOMEN and PELVIS exams. Also, the exam note might contain information on the linked exams that will not be visible to the reading physician or clinician.

**WARNING**

Locks are granted on a per-user basis. This means that if multiple users log into IntelliSpace PACS 4.4 using the same user ID, these users will be able to unlock and mark read exams that are locked by each other. To prevent this from occurring, make sure you confirm the patient identity and demographic information before beginning an exam.

**WARNING**

- Make sure that patient demographics are properly completed, so that all patient data is available for the Radiologist and Referring Physician, and diagnosis is not delayed.
- Avoid editing patient data at the modality without starting a new exam. This could potentially mix patient studies and therefore cause a Duplicate UID.

**WARNING**

Exam Notes and Diagnostic Reports are not the same entity. Medical treatment plans should never be based on Exam Notes alone, as Exam Notes often have preliminary information. Diagnostic Reports can be used to help physicians design a medical treatment plan.

**WARNING**

If immediate medical treatment is needed, or if you disagree with a prior exam note, contact the treating physician immediately. You should not rely on creating a critical exam note in these situations.

**WARNING**

IntelliSpace PACS 4.4 stores all timestamp information in GMT. Microsoft Windows then localizes this information so that all timestamps are presented in local time (as configured on the workstation). Because Microsoft may make changes in its operating systems to account for Daylight Savings Time in various time zones around the world, please ensure that user machines have the most current Microsoft updates installed so that correct times are displayed in IntelliSpace PACS 4.4 reports.

**WARNING**

When running a worklist query using a patient's MRN, it is possible that the non-numeric characters may be stripped from the MRN, possibly causing a mismatch of patient data between two or more patients. Make sure you validate the MRN against the patient name to ensure the returned patient data matches the patient you are looking for.

**WARNING**

You need to know the following information to use the Exceptions Handler safely in a live clinical environment. If you do not understand any of these warnings or how they affect you, contact your IntelliSpace PACS 4.4 System Administrator or Philips Customer Care.

- To avoid unauthorized access to imaging exceptions, do not leave a computer unattended while the Exceptions Handler is running. As a user of the Exceptions Handler, you assume responsibility for unauthorized access as long as you are logged in to the program. Before leaving a workstation, you should close the Exceptions Handler and log out of IntelliSpace PACS 4.4.
- When an exception is resolved, IntelliSpace PACS 4.4 discards the original scanner information and replaces it with information from the HIS/RIS, resulting in a complete loss of scanner information. If an exception was resolved in error and the exception is later unresolved by unlinking the exam from the image (resulting in a user-created or manual exception), the window now displays the HIS/RIS information that replaced the scanner information when the exception was originally resolved. This makes resolving the exception difficult because the HIS/RIS information is no longer accurate for this exception. IntelliSpace PACS 4.4 retains the HIS/RIS data because the original scanner information was discarded upon the initial resolution of the exception and there is no other data in the database to associate with the exception. Therefore, we strongly recommend that care be taken when resolving exceptions to avoid the loss of original image header information captured at the scanner.
- Please take care when resolving exceptions to exams that have already been dictated or marked read. Philips encourages customers to notify the responsible reading Radiologist of the exception images being added to the exam, because these images may not have been viewed at the time of dictation.

**WARNING**

Make sure you associate the exception study with the correct patient or exam.

**WARNING**

- Deleting an exception study is a potentially hazardous operation, and cannot be undone and images cannot be recovered. You should review the Warnings in this chapter to ensure that you understand the possible ramifications of deleting an exception study.
- Make sure that you understand that when you detach DICOM studies from an exam and delete the subsequent exception, you are, in fact, permanently deleting those studies. Deleted studies may contain data that would render a different diagnosis.

**WARNING**

- Make sure you label the left and right sides of an image correctly to prevent incorrect patient orientation and the possibility of misdiagnosis.
- Make sure you follow industry best practices for correct patient orientation.
- Make sure the images were acquired correctly at the modality before using them for diagnosis.
- Make sure you validate third party software to ensure that it is using the correct information from the outside source. In addition, proper validation of third party software must be done to ensure that it is using standard DICOM tags. Images that are submitted with a different pixel spacing tag than what IntelliSpace PACS 4.4 uses (0018,1164) to perform measurements on projection radiography images could lead to incorrect measurement readings, thus leading to misdiagnosis and treatment planning.

**WARNING**

Use caution when saving an image to the clipboard and copying it to another application. The image may contain confidential patient information.

**WARNING**

Use best practices to ensure that any images that arrive after Mark Read are included when making a diagnosis.

**WARNING**

- GSPS may contain clinically relevant data (such as measurements), which may display incorrectly or not at all. This could cause a misdiagnosis or a delay in treatment.
- If an error is discovered within the GSPS, a warning icon displays that indicates all GSPS content may not be displayed.
- When multiple third-party GSPS are received, IntelliSpace PACS 4.4 displays the most recent one first, because no priority information is available. This may mean that other Presentation States are not displayed by default, so the chronology may be affected, possibly leading to misdiagnosis.

**WARNING**

An image artifact may appear when a Modality LUT or a mask is applied to a sub-sampled image. The sub-sampled image means that the image data is not fully retrieved from the server and, therefore, not displaying at full resolution. Diagnosis should only occur on images that are displayed at full (100%) resolution. If images are displayed at full resolution, no artifact should appear.

**WARNING**

When viewing a collection that has been saved as a Conference Presentation State, make sure you are viewing all of the series in the collection window, especially if you have multiple collection windows open on the Exam Rack. Note the color code for each collection and whether a scroll bar is present, as it indicates there are more windows displayed on the Exam Rack. Failing to view all series within a collection may mean that you have missed images, which could lead to a misdiagnosis or delayed patient treatment.

**WARNING**

Diagnostic decisions should not be made based solely on the information presented by the CAD marker. CAD markers should be used in conjunction with an independent read from a radiologist.

**WARNING**

If immediate medical treatment is needed, or if you disagree with a prior exam note, contact the treating physician immediately. You should not rely on creating a critical exam note in these situations.

**WARNING**

Measurement values are modality dependent. The measurement values that IntelliSpace PACS 4.4 displays are derived from information sent by the modality responsible for generating the image being measured. If this modality is incorrectly configured or defective, IntelliSpace PACS 4.4 measurement values may be adversely affected and may be incorrect. Philips strongly recommends the use of an appropriately placed object of known size for determining what magnification factor has been applied to the image.

**WARNING**

Note the following:

- When performing an ROI measurement on an image that is displayed with a resolution smaller than the actual image (for example, an image in the rack for CT), IntelliSpace PACS 4.4 may calculate the ROI using a sub-sample of the original image data. The value in this case is an accurate representation of the average measured pixel values represented by the interpolated sub-sampled image. This is a close approximation to the original pixel values.
- When IntelliSpace PACS 4.4 calculates a measurement using a sub-sample of an image, the measurement result is displayed with a “~” (meaning approximate value) in front of it.
- When opening and displaying an image in full resolution, the ROI measurement values are recalculated. The “~” sign is no longer displayed, and there might be a small update/change from the measurement values displayed initially.

**WARNING**

- Do not use CDs and DVDs as a permanent or fail-safe archive for patient data. When storing data on a CD or DVD, IntelliSpace PACS 4.4 does not verify that the patient data is correctly stored and retrievable. In addition, CDs and DVDs may deteriorate over time. For long-term storage, all patient data should be stored in an archiving system (such as a PACS).
- Do not diagnose from media such as CDs or DVDs.

**WARNING**

Images printed to paper from IntelliSpace PACS 4.4 Radiology are not intended for diagnosis, and should be used only for communication purposes. For diagnostic printing, see [“Printing to DICOM” on page 347](#) (see page 404).

**WARNING**

- Data that has been retrieved from a VNA archive may be changed in the VNA by a third party user while a copy of the data is stored in the IntelliSpace PACS 4.4 Cache. To make sure that you have the latest patient and study information, delete the study in the Cache using the Server Utility Tool, and then use iQuery to search the VNA archive for the latest data. Note that when the Cache reaches capacity, studies are automatically deleted. Therefore, verify that the study is present in the Cache, because if the Cache is full, the study may be deleted automatically.
- During DICOM Query of a VNA from the Timeline, a message displays on the Canvas Page if retrieving data from a VNA archive takes too long or if the DICOM file is extremely large. The Canvas Page displays the images after they have been retrieved. The user can click Retry to load the images.

Linking Warnings

**WARNING****General Warning Message**

The current implementation of the Link tool allows you to synchronize other windows/series with the window/series you are currently browsing through. In other words, there is one master window/series (typically the one that you have selected with your mouse) and IntelliSpace PACS 4.4 tries to line up the images of the other linked windows.

Therefore, you should always review each and every series by paging through them individually, and never rely on linking as a way to review all images within a given exam. Browsing through a series that is part of a link may not display all the images that are available in the other linked series.

**WARNING**

When using the series linking feature, it is possible that images may be missing, which could cause misdiagnosis. Possible causes of missing images are:

- linking multiple series with different slice thickness
- linking series that contain different body parts or cover a larger or smaller region
- linking Oblique series

**WARNING****Linking a Multi-Phase Series with Another Series**

Multi-phase studies contain multiple images with the same location identifier. Paging through a multi-phase series that has not been split typically results in jumping back to the first slice location each time you reach the end of each phase within the series.

- If a multi-phase series is used as the master, the other linked series are synchronized on location and display the image with closest location to the one displayed in the master series.
- If the non multi-phase series is used as the master, IntelliSpace PACS 4.4 tries to find the image with the closest location in the multi-phase series, and because there are potentially multiple matches, IntelliSpace PACS 4.4 displays the best match from the first phase. (In this example IntelliSpace PACS 4.4 would never display image 7 through 12.)

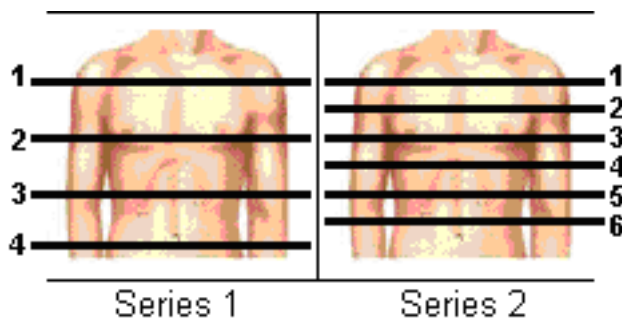
This means that it is not possible to review all images of a multi-phase series by paging through another series while using the Link tool.



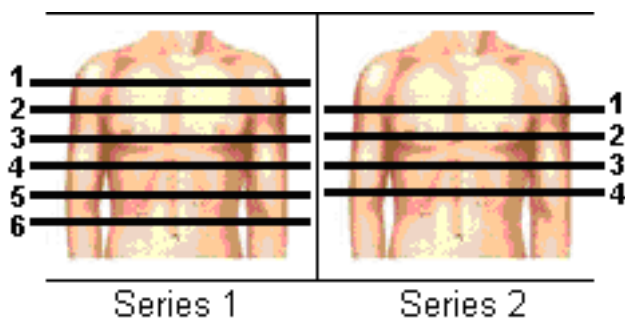
- If a multi-phase series is not split correctly, and a user links multiple series where one of the series contains multiple phases, the link function will not work correctly because not all images will be displayed while paging through the series. IntelliSpace PACS 4.4 can be configured to automatically split all studies from a particular CT modality in multiple series based on DICOM tag (0021,0012). However, because not all modalities can be configured to provide a unique identifier that can be used for splitting, IntelliSpace PACS 4.4 provides the ability to manually split studies. A technologist can perform this function and save it as a Presentation State, or a Radiologist can manually split a study after first opening the study.

**WARNING****Linking Multiple Series with Different Slice Thickness**

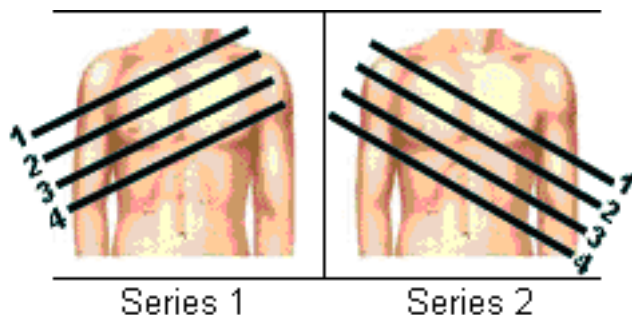
An exam might contain multiple series acquired at different (or even variable) slice thickness. For example, one series might be acquired at 10mm slice thickness and one at 2mm. If you link these series and page through them using the very thick 10mm series as the master, many images from the 2mm series will be skipped. If you page through the images using the very thin 2mm series as the master, every image of the 10 mm series will be displayed. This means that paging through multiple series simultaneously is possible with the Link tool, but images will be skipped, unless the series with the thinnest slice thickness is used as the master.

**WARNING****Linking Series that Contain Different Body Parts**

Series that contain different body parts or cover a larger/smaller region of the body can be linked. For example, a CT series that contain a CHEST-ABDOMEN-PELVIS might be linked with a CT series that contains only a CHEST. By navigating through the CT CHEST series, you will never be able to see the ABDOMEN-PELVIS of the other series. Conversely, by using the CHEST-ABDOMEN-PELVIS as the master series, you can look at the CHEST images side-by-side, as well as at the ABDOMEN-PELVIS images of the master series. This means that using the Link tool, you cannot go beyond the scope of the master. This might be obvious if the body parts are totally different like in the CHEST-ABDOMEN-PELVIS example, but sometimes they are the same, but they do not start at exactly the same location. In this case, you might miss a few slices.

**WARNING****Linking Oblique Series**

IntelliSpace PACS 4.4 allows you to link oblique series. The goal is to provide users with the ability to link oblique series that are more or less in the same orientation. However, IntelliSpace PACS 4.4 does not prevent you from linking obliques that have totally different orientation. This means that linking obliques that are not of roughly the same orientation leads to unexpected behavior in IntelliSpace PACS 4.4.

**WARNING**

Deleting studies is permanent, meaning that deleted studies cannot be recovered. Deleted images can be recovered. However, all presentation states, measurements, and annotations are lost. Also, if an image has been deleted after receiving a new Study UID, the image cannot be recovered. Be aware that deleted images may contain data that would render a different diagnosis.

**WARNING**

Users with appropriate permissions should not assign new Study UIDs to studies that have not been confirmed to be complete (status is not designated "Complete").

**WARNING**

Do not use screening ratings for administrative or clinical purposes.

**WARNING**

If multiple users share the same User Preferences, IntelliSpace PACS 4.4 cannot prevent the users from changing settings in each of the users' User Preferences.

**WARNING**

- Philips strongly recommends that you ask for assistance from your printer vendor when configuring the life Size Printing option for a specific printer, and that you validate the correctness of the configuration by verifying that the output is indeed printing life-sized, after completing the configuration.
- To verify the correctness of the life size printing settings provided by the printer vendor, Philips recommends that you first perform a CR exam of an object with known size, then print the exam from IntelliSpace PACS 4.4, and finally print directly from the CT scanner in order to verify accuracy of the life size print. Measurements performed on both films, from IntelliSpace PACS 4.4 and directly off of the CT scanner, should be the same as the original known object size.

**WARNING**

In the Add DICOM Source dialog box for Color WW/WL Settings, enabling any non-zero deviation value can cause alteration of true colors. Attempting to select a non-zero deviation value will cause the message "Setting a deviation value other than 0 can alter true color values" to display. You should also exercise caution when using this feature with scanned-in images.

**WARNING**

Coarse Fast Cine may skip images, depending on how far the mouse is from where the Fast Cine originally began.

**WARNING**

When an existing Hanging Protocol or presentation state applied contains the image processing but is disabled for the modality in system preferences, the following message shall appear in the banner "Image processing will not be applied since it is disabled in the system for this modality".

**WARNING**

When the Acceleration Gain option is selected, the cursor changes shape when a set of images is passed over and not shown to indicate that some image skipping is occurring. This is analogous to a flipping through the pages of a book to quickly get to the area of the book you want to begin to read. When you select this option, you must acknowledge the following message, which informs you that images may be skipped when navigating a large number of images. You control when skipping occurs by the rapidity with which you move the mouse. The cursor changes shape to indicate that images are being skipped during a non-diagnostic transversal of images.



Note: The Acceleration Gain feature permits images to be skipped while navigating a large number of images rapidly in a non-diagnostic mode.

OK

Cancel

Mobile Telephones and IT Equipment

This medical device software must be installed on appropriate IT equipment that complies with IEC standard 60950. Other electronic equipment exceeding the limits defined in IEC 60950, such as certain mobile telephones, could, under unusual circumstances, affect the use of the IT equipment and thus the medical device software.

**WARNING**

You should not allow any portable radio transmitting apparatus (such as mobile telephones) - whether switched on or off - in the vicinity of the IT equipment. Such apparatus could exceed IEC radiation standards and, under unusual conditions, interfere with the proper functioning of the medical device software. This could in extreme cases lead to clinical misdiagnosis, and/or loss/damage of patient data.

3 Getting More Information

Information You Need

More information about using the IntelliSpace PACS 4.4 system is available from the following sources:

- Documentation
- Online Help
- Technical support

Documentation

Consult the following documentation for additional information about using IntelliSpace PACS 4.4.

- **IntelliSpace PACS 4.4 Admin Tool with iSyntax User Guide**—This manual describes activities that system administrators must complete to maintain the IntelliSpace PACS 4.4 system, including the assignment of users and permissions to work groups.

Important

This guide is only available to system administrators (not all users)

- **IntelliSpace PACS 4.4 Radiology with iSyntax User Guide**
- **IntelliSpace PACS 4.4 Enterprise with iSyntax User Guide**

All mentioned documentation is available for the **IntelliSpace PACS 4.4** Software.

Online Help

The ONLINE HELP contains instructions for logging on and starting the application, and full instructions for using the application.

Technical Support

Should you encounter difficulty using the IntelliSpace PACS 4.4, refer to the chapter for basic information about the system and follow the guidelines below to locate the relevant source for information and assistance.

- **Configuration Settings**—Configuration includes the assignment of user permissions and the content of various lists used in the applications. For questions in these areas, consult a hospital IntelliSpace PACS 4.4 system administrator or refer to the **IntelliSpace PACS 4.4 Admin Tool with iSyntax User Guide**.
- **Technical Issues**—These issues include backup schedules, network connectivity, and workstation operation. Start by contacting a hospital IntelliSpace PACS 4.4 system administrator or refer to the **IntelliSpace PACS 4.4 Admin Tool with iSyntax User Guide**.

If you cannot resolve your problem, contact the Philips technical support group serving your area. To obtain contact information for this group, ask your local Philips Healthcare representative.

When contacting Philips technical support, please have the following information available:

- Caller name, customer organization name, and location.
- Site number, if applicable.
- Detailed description of the problem, including any history of troubleshooting efforts completed before or after the problem first occurred

4 Getting Started

When your System Administrator has assigned your IntelliSpace PACS username and password, you can access IntelliSpace PACS. Your IntelliSpace PACS System Administrator should ensure you can access the IntelliSpace PACS server and tell you which authentication system to log in to. Because IntelliSpace PACS is customized on a user-by-user basis, your interaction with IntelliSpace PACS (the patients you have access to, the tools available to you, and so on) may be different from that of other users.



WARNING

- Please adhere to your site security policy to establish strong passwords and take appropriate measures to secure the network environment to prevent access by unauthorized users and possible modification to patient data.
- Each user is assigned a unique User ID and password. This prevents users from sharing the same personal folders, user preferences, and shortcuts and prevents one user from deleting or changing the user preferences and personal folders of other users. You should never share your User ID and password.

IntelliSpace PACS requires a monitor color setting of 24 bits or higher. A message displays if you are using a lower bit rate. See [“Setting the Monitor Color Resolution” on page 56](#).

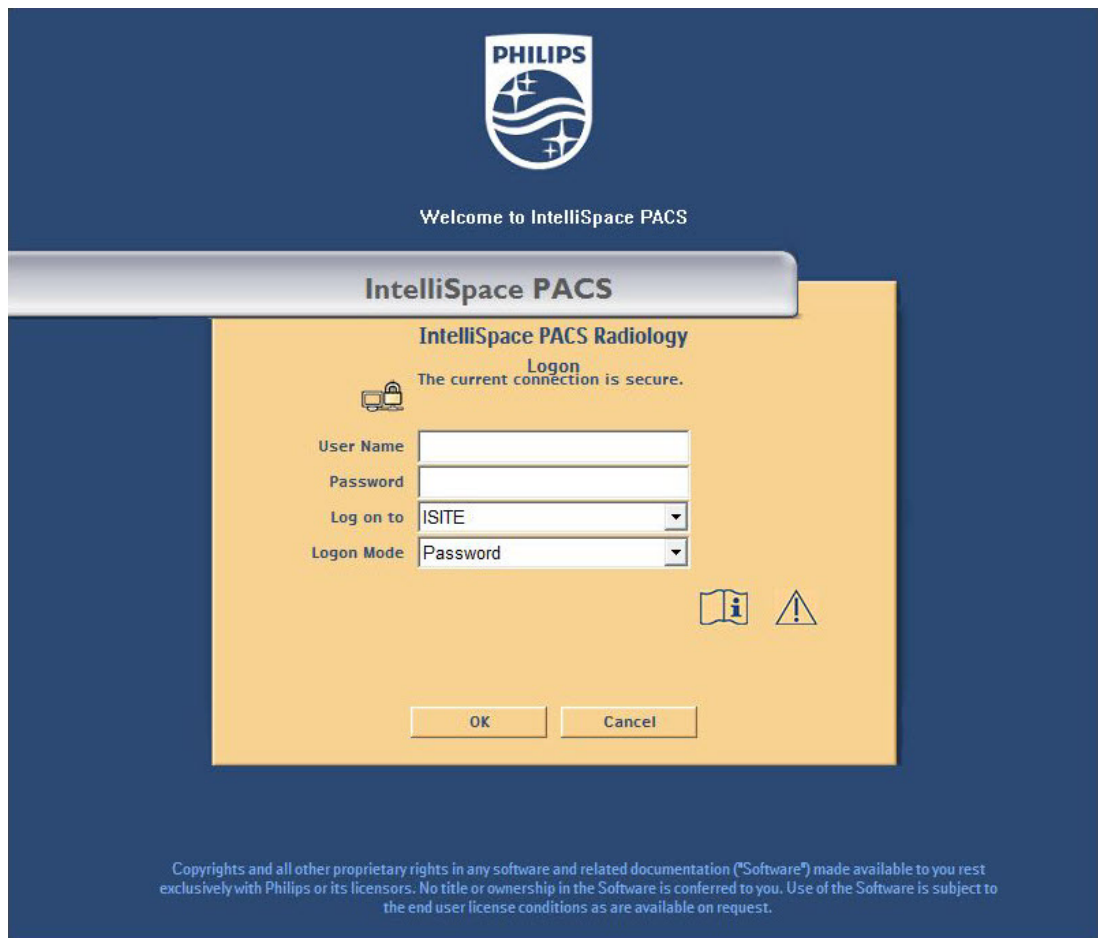
Logging on to IntelliSpace PACS

1. Double click on the **IntelliSpace PACS Radiology** icon present in the desktop.
OR
Click the **IntelliSpace PACS Radiology** from the start menu.
The IntelliSpace PACS Radiology logon page displays.

NOTICE

Incase if the Side By Side installation was performed in the machine, you will see two versions of IntelliSpace PACS Radiology. You can choose and open one version at a time.

2. In the **Login** screen, enter the user name and password provided by your System Administrator.



3. In the **Log on To** field, select the appropriate authentication scheme. You can set up the **Workstation Location** in **Machine Preferences** for multi-site configuration. See [“Setting General Preferences” on page 517](#).
 - In the **Log on to** field, **ISITE** will be selected by default. If an **External Authentication Source** is configured for the user, then it will be displayed in the **Log on to** drop-down list.
 - Click the **Log on to** drop-down list and select a configured external authentication.
4. In the **Logon on Mode** field, select the configured Logon Mode. **Password** is selected by default. If the selected external authentication source is configured with both **Password** and **Certificate** Supported Credentials, then both Password and Certificate will be available
5. If support for more than one language is installed, select the desired language from the **Language** drop-down list.

Tip

If support for more than one language is not installed, then the Language field will not be available.

6. If connecting from an off-site location, select the **Remote Reading Mode** check box to improve caching of exams that you open from a filter.
7. Click **OK** or press **Enter**. Your controls and preferences are loaded and your name is displayed in the upper left corner of the screen.

NOTE

- User account will get locked when you exceed the number of unsuccessful login attempts configured by your administrator. In such event, contact your system administrator to unlock your account.
- If the locked user tries to login during account lockout time, the user will be informed with a message stating that "Your account has been locked. Please contact your system administrator".

CAUTION

Upon successful logon, If the "Diagnostic Monitors, always on top" option is selected in the User Preference--> General Preference, any configured diagnostic monitor can be used only to hang/view images. In such instances, the configured diagnostic monitor's screen will turn black.

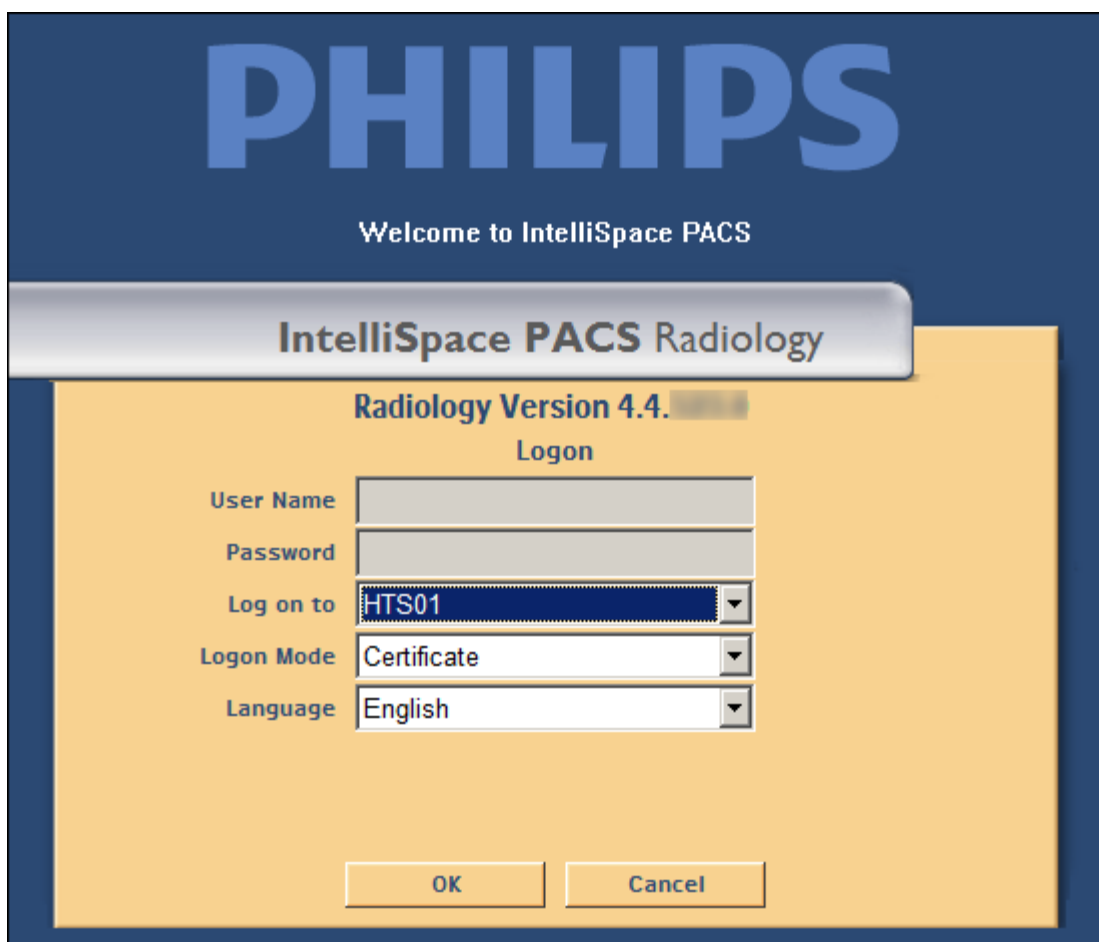
If the "Diagnostic Monitors, always on top" option is not selected, then the diagnostic monitors can also be used to work with the Windows applications until exam(s) are opened in the canvas page.

User can change to the required option at any time, and re-login for the changes to take effect.

Refer "[Setting General Preferences](#)" on page 446 section for more information.

CAC/PIV Authentication

Users can login using Common Access Card (CAC)/Personal Identification Verification (PIV) authentication. This feature allows the users to select Password or Certificate from the logon screen.



The image shows the login interface for Philips IntelliSpace PACS Radiology. At the top, the Philips logo is displayed in large blue letters. Below it, the text 'Welcome to IntelliSpace PACS' is centered. A grey banner with the text 'IntelliSpace PACS Radiology' is positioned above a yellow login box. Inside the yellow box, the text 'Radiology Version 4.4.' is followed by a small greyed-out area. Below this, the word 'Logon' is centered. The login form includes five fields: 'User Name' (text input), 'Password' (text input), 'Log on to' (dropdown menu with 'HTS01' selected), 'Logon Mode' (dropdown menu with 'Certificate' selected), and 'Language' (dropdown menu with 'English' selected). At the bottom of the form are two buttons: 'OK' and 'Cancel'.

See [“Accessing IntelliSpace PACS Remotely”](#) on page 63 for information on connecting to IntelliSpace PACS remotely.

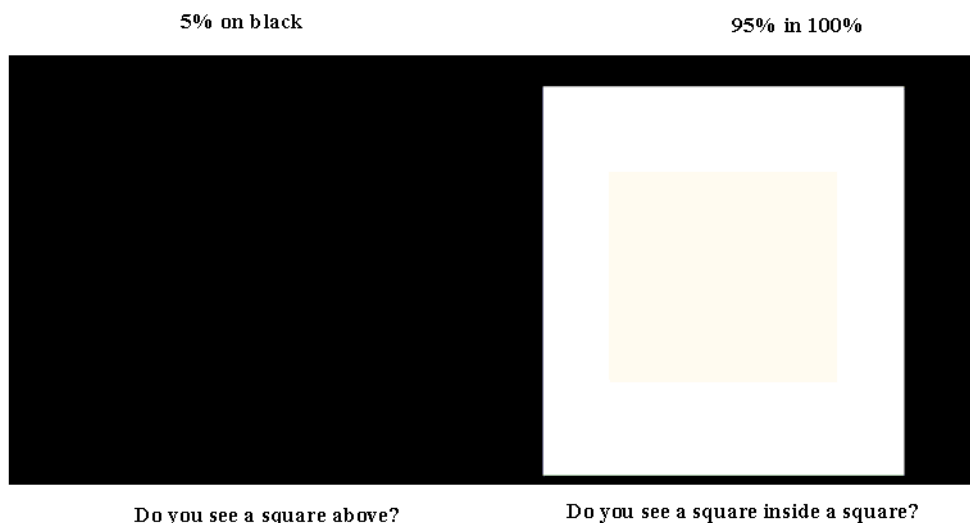
Setting the Monitor Color Resolution

IntelliSpace PACS requires a monitor color setting of 24 bits or higher. If you are using a lower bit-rate, a message displays.

1. Right-click on your Windows desktop and select **Properties**.
2. In the **Display Properties** dialog box, click the **Settings** tab and then set the **Colors** section pull-down menu to 24 bits or higher.
3. Click **OK**. A message displays.
4. Click **OK** again to apply the new settings.

Monitor Calibration

Use the following image to calibrate your navigation console (not diagnostic) monitor.



Adjust the brightness and contrast of your monitor until you can see all three squares simultaneously. Be sure that the ambient light where you are working isn't too bright.

The correct calibration of your navigational console (the monitor that displays the IntelliSpace Radiology worklists and Canvas Page) and your diagnostic monitors (where the diagnostic radiological images are displayed) is critical to the identification of patient pathology and subsequent patient care. IntelliSpace PACS Radiology will not work properly if the monitors used in conjunction with it are not properly configured.



WARNING

Only authorized diagnostic monitors should be used for a mammography configured IntelliSpace PACS client.

Never use other monitors to display diagnostic images for a mammography configured IntelliSpace PACS client.

Philips authorizes the use of the following diagnostic monitors for a mammography configured IntelliSpace PACS client:

- **WIDE 5 mega-pixel monitor: model IF2105MP**
- **Barco 5 mega-pixel monitor: models Coronis 5MP**
- **Eizo 5 mega-pixel (MP) monitor: model Radiforce 5MP**

To configure your monitors, carefully follow the specifications and directions laid out by the manufacturers of your monitors. You can also configure the default font size for the metadata area, screen overlays, and menu displays in Machine Preferences. See [“Setting Display Monitor Preferences” on page 519](#).

For specific details in calibrating and configuring the diagnostic monitors, follow the instructions in the *IntelliSpace PACS Quality Control Manual*.

The following links may be helpful:

- <http://www.barco.com>
- <http://www.widecorp.com>
- <http://www.eizoglobal.com>

Configuring Pixel Pitch for the Diagnostic Monitor

IntelliSpace PACS features a True Size zoom preset that is available from the hanging protocol or through a shortcut menu setting. True Size displays digital mammography images (for the same view of the same patient anatomy without consideration for magnification) in the same relative size even if these images are produced by different detector technologies with different inherent resolution or matrix size.

For True Size to be accurate, the Diagnostic Monitor pixel pitch must be configured properly in the Machine preferences. See [“Setting Display Monitor Preferences” on page 519](#) for the other settings you make in the Machine preferences.

To calibrate your monitors, you should be aware of monitor settings that could affect the native pixel pitch and the appearance of True Size. Examples of these settings are horizontal/vertical size, Pincushion, Pin Balance, and Trapezoid.



WARNING

- **True Size should not be used as a measurement tool, since pixel pitch is often misleading on certain monitors.**
- **Before making clinical decisions, you must ensure that the proportions of the image are close to real size proportions. Also, you should use the measurement, annotation, and image scale tools available in IntelliSpace PACS, rather than using physical rulers or other tools.**

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to Machine Preferences. The list of available machine preferences displays. See [“Setting Display Monitor Preferences” on page 519](#).
3. Click **Display Monitors**. The right side of the **Preferences** dialog box displays options for the display monitor(s). If there is more than one monitor, select the first monitor you want to configure from the list. The **Resolution** for the selected monitor displays. Each monitor has its own **Pixel Pitch** setting in the **Screen Settings** area.
4. Select the monitor's **Pixel Pitch** from the list, or enter a value (in mm) manually. To determine the monitor pixel pitch, refer to the monitor's technical specifications. If the monitor's resolution in the "Native Resolution" is defined by the factory, you should be able to use the Pixel Pitch value that is defined in the technical specifications. Be aware that any change in the manufacturer-defined pixel pitch will affect measurements.
5. If the following conditions are not met, True Size will not be applied:

- The monitor's pixels must be square (so the horizontal pixel pitch is the same as vertical pixel pitch).
 - The image pixel spacing values is in mm, not pixels.
 - The image horizontal and vertical pixel spacing values should be equal, so the shape of the image pixel is square.
6. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.
 7. To configure another monitor, select it from the **Display Monitors** list.
 8. Continue to configure monitors as desired.
 9. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

True Size Verification

After configuring the monitor's Pixel Pitch, you must verify that the True Size setting behaves as expected. One way to verify this is to open an image that complies with the previously described requirements, and select the **True Size** zoom option. Once selected, the horizontal and vertical scales at the bottom and right side of the image should match a real-life ruler unit (meaning each division in the scale is 10 mm at lower zoom factors and 1 mm per division at higher zoom factors). Many variables can influence the pixel spacing values of the image during acquisition, such as distance from the plate, different depth of field, and so on.



WARNING

Incorrect Pixel Spacing and Pixel Pitch values affect the accuracy of the True Size feature. Therefore, you should always make sure that the size of the image is as expected when reviewing a True Size zoomed image.

NOTE

IntelliSpace PACS Radiology implicitly splits any diagnostic monitor with width greater than or equal to 2400 pixels into two virtual monitors.

Accessing Patients and Exams

Patient Lookup is the first screen displayed when you log in to IntelliSpace PACS. It allows you to quickly find patients (with or without associated exams) based on a combination of search criteria. See [“Finding and Managing Patient Information” on page 81.](#)

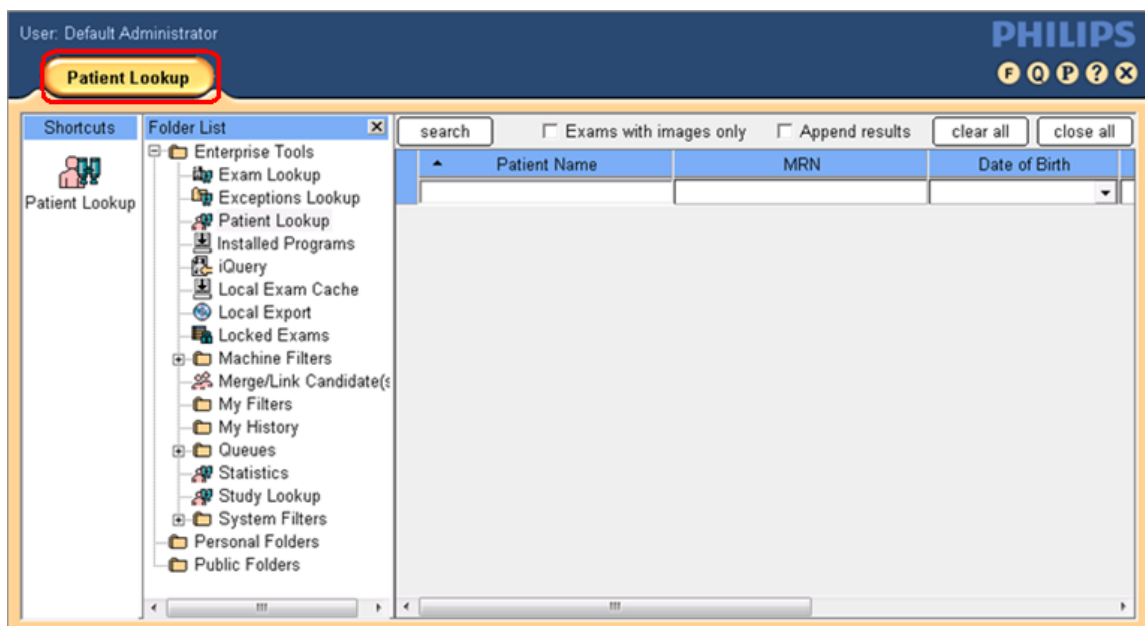


Fig. 6: Patient Lookup

Accessing Online Help

1. Click the question mark icon on the Control Strip near the upper-right corner of the window.
2. Either type the word or phrase that you need information about and click **List Topics** and then click **Display**, or click the **Contents** tab and click on the desired topic, double-clicking the topic to display any sub-topics. Near the bottom of the **Search** tab, you can select the following options:
 - Search previous results (limits new search within the previous results)
 - Match similar words (expands results to include matches of similar words)
 - Search titles only (limits search to topic titles only)



Fig. 7: Accessing online help

Setting Preferences

Click the **P** icon on the Control Strip near the upper-right corner of the window. See [“Setting User Preferences” on page 445](#), [“Setting System Preferences” on page 471](#), and [“Setting Machine Preferences” on page 517](#).



Fig. 8: Setting preferences

Setting Federation Status

NOTE

The "F" icon is not available in normal PACS deployment. This icon is visible only when Federation is deployed and enabled, and the user has the rights to use the Federation capability. For more information on Federation and its functions, see [“Patient Lookup and Federation” on page 83](#).

1. Click the **P** icon on the Control Strip.
2. In the User Preferences dialog, select **Automatically connect to federation**.
3. Click **Apply** and then click **OK**.
4. Log out of IntelliSpace PACS and then log back in to activate the Federation preference.
5. The **F** icon on the Control Strip near the upper-right corner of the window should appear as a light-colored beige background.



Fig. 9: Viewing Federation status

6. To disable Federation, click the **F** icon. The icon color will turn gray.
7. To enable Federation again, click the **F** icon. The icon color changes back to beige.

See [“Patient Lookup and Federation” on page 83](#), for more information about the Federation icon and the significance of its color changes.

Viewing IntelliSpace PACS Version Information

Click the Philips logo on the Control Strip near the upper-right corner of the window to display an **About** screen that displays the IntelliSpace PACS version information.



Fig. 10: Viewing IntelliSpace PACS version

Logging Off

- Click the **X** icon on the Control Strip near the upper-right corner of the window. If you are viewing an exam, a message displays asking if you are sure you want to close all exam(s).



Fig. 11: Log off icon

Resizing IntelliSpace PACS Radiology Window

IntelliSpace PACS Radiology window can be resized. After resizing, the window size is retained for the logged-in user. To be able to resize IntelliSpace PACS Radiology window, ensure that **Full Screen** option in **Navigation Console Sizearea**, of **Machine Preferences** is **not** selected. See [“Setting Machine Preferences” on page 517](#).

To resize the window, place the cursor on any edge/corner of the window and drag the double-arrow that appears on the edge/corner.

5 Accessing IntelliSpace PACS Remotely

Overview

IntelliSpace PACS enables you to access patient exams stored at a main location from a remote site, such as your home or off-site location. To compensate for the slower connection speed of a WAN, DSL, ISDN, or 56K modem connection, you can select from several levels of compression and image quality adjustments. When required, you can still download a “full fidelity” (non-compressed) image, which is the highest quality image.

To use remote access, you select your connection method when you log into to IntelliSpace PACS. If your institution is a multi-site deployment, additional locations might be displayed in the **Workstation Location** list. These locations correspond to appropriate site names of your multi-site deployment. If you are not sure which location to select, or if you need clarification on multi-site configuration, contact your IntelliSpace PACS System Administrator.

You must be aware of the amount of compression in use when you view images and series in IntelliSpace PACS. Note that Hounsfield unit measurements are not correct unless the image you are measuring is at full fidelity.

You can use the following Workstation Location compression modes when logging in from an off-site location, depending on whether you are running IntelliSpace PACS Enterprise or IntelliSpace PACS Radiology:

- Main (no compression)
- Wide Area Network (WAN)
- DSL/cable modem
- ISDN/cable modem
- Teleradiology (most compression)

Minimum Network Requirements

General Requirements

At the minimum, a switched 100Mb/s local area network (LAN) shall be provided. For Study acquisition scenarios that require STAT interpretation, Hardware (DICOM processors and storage modules) and Client Devices must reside on a contiguous 100Mb/s switched LAN. DSL, cable modem, satellite and other non-commercial-grade technologies should not be used due to high latency.

**WARNING**

- Issues including delays with image retrieval, delays in Study migration between servers/ locations, and application responsiveness issues (pauses, halting) may be experienced when the PACS Service is used on a network that does not meet the Minimum Network Requirements.
- Be aware that remote sites that do not connect directly to the main site and/or that connect with a sub-optimal bandwidth, can cause incomplete transfer of or unavailability of critical data at the time of diagnosis.

Urgent Cases/Emergency Room and Availability

Depending on the urgency of a case, studies may need to be accessed quickly after acquisition for diagnostic interpretation to provide feedback to a requesting ER physician. An ER case typically needs to be read STAT, or immediately. If the study is at a remote site, any remote workstation pulling a study from that location over the WAN may be limited by the bandwidth and latency given the size of the study. In this scenario, the user's requirements (the radiologist) are the ability to view the study in full fidelity in near real-time or until the study has been transmitted in full to the workstation using local exam caching. Otherwise, the radiologist might need to wait until the study is migrated to the main location where a faster connection is available.

Also, given the life-critical nature of these cases, uptime requirements and network quality of the WAN connection service provider should be considered. Service Level Agreements (SLAs) for the service providers need to be considered to ensure that the network remains up and available to meet patient care requirements.

Teleradiology Mode

Teleradiology Mode is the lowest connection speed available and is designed to be used when you connect to IntelliSpace PACS over a telephone line with a 56K modem. This mode uses the highest amount of compression to compensate for the extremely poor data transfer rate often experienced over a telephone line.

1. In the **Login** screen, enter your username and password.
2. From the **Workstation Location** list, select **Teleradiology**.
 - The supplied setting is **Main Location**. You may use this setting if you do not wish to use compression, but you should note that transmission times are increased and image quality transfer may fail if the available bandwidth is insufficient.
3. In **Teleradiology Mode**, IntelliSpace PACS displays a notification message warning that images are compressed and explaining the compression indicator. When you load an exam in this mode, IntelliSpace PACS displays the progress of the exam loading. The number listed is the percentage of the number of total images loaded.
4. To cancel this process at any time, click **Cancel**.

Image Quality Indicator

When images in other than full fidelity are displayed in IntelliSpace PACS, the quality of the image is marked with an icon in the lower right corner that represents the degree of compression for that image. There are two possible icons:

- The **JPEG Lossy** icon is displayed when images are received by IntelliSpace PACS from a modality that are already compressed using the JPEG lossy compression.
- The **Compression Level** icon is displayed when IntelliSpace PACS has applied a higher compression to improve upload time to the client. In this case, you can improve the image quality to full fidelity by right-clicking and selecting **Full Fidelity** from the menu.

The **Compression Level** icon also includes text that gives further details about the compression levels in use. There are three different cases:

- iSyntax compression images display the word “Lossy” followed by the appropriate compression quality icon based on the quality factor or set to the percentage based on the compression ratio.
- Images using JPEG compression display “JPEG Lossy” followed by the compression icon that specifies the J-type compression level.
- Compacted images display “Lossy” followed by the compression quality icon that specifies the L-type compression level.

Improving Image Quality

To improve image quality to full fidelity in one step, right-click an image on the Canvas Page, and from the menu select **Full Fidelity**. See [“Introduction to the Canvas Page” on page 187](#).

Shown below are the grades of compression.

Icon	Compression Level
	Grade one, highest level of compression. This is the initial compression level of images viewed when logged in with the Teleradiology setting.
	Grade two. This is the initial compression level of images viewed when logged in with the ISDN setting.
	Grade three. This is the initial compression level of images viewed when logged in with the Cable-Modem/DSL setting.
	Grade four.

Icon	Compression Level
	Grade five. This is the initial compression level of images viewed when logged in with the Wide Area Network setting.
	Grade six.
	Grade seven, no compression (full fidelity). This is the initial and constant compression level of images viewed when logged in with the Internal Network setting.
	JPEG-type compression. NOTE: In IntelliSpace PACS Radiology, the JPEG compression indicator (icon) will not be seen on the rack thumbnail window for the JPEG compressed images. But, the indicator will be seen on diagnostic monitor window.
	IntelliSpace PACS lossy compression. NOTE: In IntelliSpace PACS Radiology, the Lossy compression indicator (icon) will not be seen on the rack thumbnail window for the Lossy compressed images. But, the indicator will be seen on diagnostic monitor window.
	Intermediate draw symbol.

Image Processing Effects

Data in IntelliSpace PACS full resolution is presented without loss, (that is, identical to the original data) except in the case where lossy compression is used, or image processing is applied. These cases are clearly indicated on the display through the following icons in the image pane:

Icon	Indicates
	Lossy compression has been used on the data presented. There are six levels of compression, each represented by a different version of this icon.
	Some lossy process preceded data presentation (for example, the “lossy” flag set in the DICOM)

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Icon	Indicates
	Image source is a lossy JPEG image
	Image processing has been applied

In the case of image processing, data is altered to enhance some characteristic. This may or may not cause data loss, depending on the method chosen. For example, a median filter is a noise reducer and clearly causes data loss, while an edge detector enhances edges – thus altering, but not necessarily losing data. These methods are all documented in [“Image Processing” on page 267](#), and are industry standard methods.

When intermediate resolution data is displayed, the markers still apply. However, in the case of uncompressed, unprocessed data, if the data is not presented pixel for pixel from the source data (that is, other than 100%), then some form of interpolation is used. This is a possible combination of subband filtering due to the wavelet representation used in the internal representation, and pixel replication, bilinear- or bicubic-interpolation at the display. These are also common, industry standard methods. The display indicates the degree of zooming, with 100% indicating pixel for pixel correspondence with the original data.



WARNING

Because of the pervasive use of lossy compression and other image processing methods in the medical industry (such as edge detection), it is at the discretion of the diagnostic viewer to treat these images as diagnostic.

Remote Reading in IntelliSpace PACS Radiology

Remote reading is intended to improve your reading experience when connecting to the main site from your off-site location. Remote reading in IntelliSpace PACS Radiology enables you to cache ahead up to three exams and two relevant priors, as well as including auto-locking/caching STAT exams in full fidelity (resolution), depending on how your Machine preference are set.



WARNING

To enable remote users to use remote reading, your System Administrator should configure Least Cost Routing rules to display studies in full resolution.

Note the following:

- Before remote reading mode can be selected at login, you must select the **Enable remote reading** check box in the **Remote Reading** settings under Machine Preferences. See [“Setting Remote Reading Preferences” on page 523](#).
- Before you can cache ahead, you must select the **Automatically open next unread exam from active filter after marking read** check box in the General User preferences. See [“Setting General Preferences” on page 446](#).

Remote reading only applies to exams that you open from a filter; all exams you open from a filter are cached. You can unlock cached exams by right-clicking on an exam and selecting **Release Lock**. If you unlock the main exam, IntelliSpace PACS stops caching the exam and its priors. With the **Local Exam Caching** preferences, you can set a preference for IntelliSpace PACS to automatically unlock cached exams locked by the look-ahead feature if they have not been opened within 60 minutes of locking. You can also set a preference to have IntelliSpace PACS automatically erase all cached exams from your hard drive when you log out. See [“Setting Local Exam Caching Preferences” on page 522](#).

If you have a slow connection, you might need to wait for a large exam to complete caching before you can open it.

The hanging protocol determines which priors to load. The number of priors loaded is the lesser of that specified by the hanging protocol and the **Remote Reading** preferences.

6 Program Layout

The basic layout elements in IntelliSpace PACS are the Control Strip, Folder List, and Shortcut Bar. When you first log on, the **Patient Lookup** page displays, allowing you to find patients and their exams. You can **Shift-click** to select contiguous patient names or **Ctrl-click** to select multiple, non-contiguous patient names.

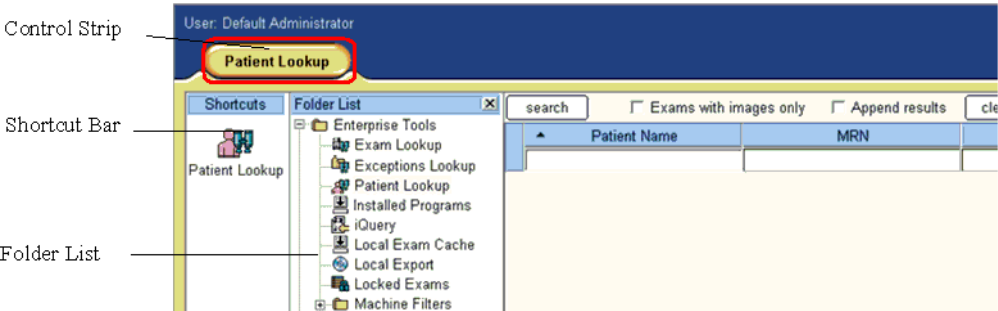


Fig. 12: IntelliSpace PACS program layout

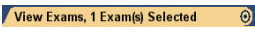
Control Strip

The Control Strip displays at the top of IntelliSpace PACS after you log in.



Fig. 13: Control Strip

It displays the name of the current user and the following:

Icon	Description
	A tab showing the current action. You can click this tab to return to this action from the Canvas page (for example, Patient Lookup or My Filters). You can select multiple, non-contiguous patients using Ctrl-click .
	This tab displays when you double-click on an exam in the worklist, displaying the Canvas Page. If you have viewed more than one patient's exams, you can right-click on the tab to select the patient whose exams you would like to view, or to select the Close All Patient(s) option. Click the icon on the right side of the tab to close the currently displayed exams. The patient's name, sex, birth date, patient ID, and referring physician are displayed below the tab.
	Icon for setting Federation status (displayed only when Federation is enabled and system is deployed in Federation mode). See "Setting Federation Status" on page 61 .
	Icon to access the iExport Queue application (if you have the proper privileges). See "iExport for DICOM Export" on page 348 .

Icon	Description
	Icon to access the Preferences dialog box (always displayed).
	Icon to access the online help (always displayed).
	Icon to log off of IntelliSpace PACS (always displayed).
Low memory warning	If available memory falls below 50 MB for IntelliSpace PACS Enterprise or 128 MB for IntelliSpace PACS Radiology, a notification displays in the Control Strip. Users should contact their IT department to increase hardware components to meet their viewing needs.
	Displays an About box that displays the Philips end-user license agreement and information.

Folder List

The Folder List provides access to various IntelliSpace PACS areas and tools. Folders are storage places for studies you would like to save. User folders are private to the user; public folders are shared by everyone who has permission to access public folders. You can use folders to save studies for reference later, or studies to share with a group of users. Folders can help solve workflow process, such as quality control or tumor board review sessions. Examples of folders include:

- **Tumor Board:** Physicians can create folders that allow them to save pointers to studies they want to review during a tumor board meeting.
- **Image Quality:** Radiologists who see an image quality acquisition problem or technique can mark the image with an annotation and save it as a Presentation State. They can then move it to a shared system folder marked “Image Quality Issues.” A supervisor or PACS Administrator can review the folder throughout the day and work with the Technologist to resolve the issues.
- **Clinic:** In an orthopedic group, nurses can put studies in Public folders to make it easier for a group of physicians to access them.

If you have the proper privileges, you can create shortcuts for tools and folders. You can also create personalized folders that contain links to relevant clinical exams, by dragging and dropping. (Note that dragging and dropping an exam listing to a folder moves links to exams. It does not copy the exam or move data from one folder to the next.) See [“Adding Exams to Folders” on page 73](#). You can also make patient information associated with exams in Personal Folders anonymous. See [“Making Patient Information Anonymous” on page 74](#).
The Folder List contains the following folders that you cannot rename or delete:

- **Enterprise/Radiology Tools:** The Tools folder contains the basic IntelliSpace PACS Enterprise or Radiology tools, depending on which application you are using. The list of tools is based on your preferences and user privileges. The complete list of IntelliSpace PACS Tools is displayed below. You cannot add folders to the Tools folder.
 - **Exam Lookup:** Allows you to find exams, based on a combination of search criteria. See [“Exam Lookup Overview” on page 115](#).
 - **Exceptions Lookup:** Allows you to find exceptions, defined as exams whose DICOM information conflicts with information from the HIS/RIS or the IntelliSpace PACS database. See [“Exceptions Lookup Overview” on page 169](#).
 - **Patient Lookup:** Allows you to find patients, based on a combination of search criteria. See [“Patient Lookup Overview” on page 81](#).
 - **Resolved Exceptions:** Displays the **Resolved Exceptions** worklist, allowing you to view a list of all resolved exceptions. See [“Working with Resolved Exceptions” on page 179](#).
 - **Installed Programs:** Displays the currently installed programs, such as the IntelliSpace PACS Volume Vision product. If the current version of Volume Vision is already installed, the **Install** button is inactive; if the current version is not installed, you can click **Install** to get the latest version. See [“Philips IntelliSpace Clinical Applications” on page 329](#).
 - **iQuery:** Allows an authorized user to retrieve DICOM studies from your institution's digital archive and send them to IntelliSpace PACS. See [“iQuery for DICOM Study Retrieval” on page 358](#).
 - **Local Exam Cache:** Allows you to save patient exams on your local machine for later review. This speeds up access to image data when running IntelliSpace PACS remotely.
 - **Local Export:** Allows you to burn CDs and DVDs of clinical exams with all of their related diagnostic reports and information. The resulting CD/DVD can include an embedded IntelliSpace PACS Media Viewer, allowing the user to examine all the clinical images and information without having to connect to the Internet or download the IntelliSpace PACS Viewer. See [“Using the Media Viewer” on page 341](#) and [“Working with VIP Patient Exams in the Media Viewer” on page 345](#).
 - **Locked Exams:** Lists which exams are opened and locked, and by whom. Users with the proper privileges can unlock an exam on this worklist. See [“Viewing Locked Exams” on page 129](#).
 - **Machine Filters:** Contains the IntelliSpace PACS supplied machine filters and any system filters set up by your IntelliSpace PACS System Administrator. See [“Creating Filters” on page 158](#).
 - **Merge/Link Candidates:** A list of patients that are identified by the IntelliSpace PACS system as candidate pairs for patient linking and merging. See [“Merging Patient Records from the Same Organization” on page 105](#).

- **My Filters:** While initially empty, this folder can contain all of your personalized search filters. You create filters in the **Preferences** dialog box (accessed by clicking the **P** button on the IntelliSpace PACS Control Strip) and directly from a worklist. Filters can be based on combinations of modality, body part, exam code, date, patient age, and other criteria. See [“Creating Filters” on page 158](#).
- **My History:** Contains the last 100 exams you have viewed. Additional exam listing information includes Exam Marked Read by Me.
- **New Images Lookup:** If the New Images After Mark Read feature has been enabled, an additional folder is displayed in the Folder List, called New Images Lookup. It is similar to the Exam Lookup, except that it displays a list of exams for which new images have arrived after they have been marked read in IntelliSpace PACS Radiology. See [“New Images After Mark Read” on page 225](#).
- **Queues:** If you have the proper permissions, this folder is available, and contains the iQuery and Federation queues, if Federation is activated. See [“Viewing the Federation Queue” on page 89](#) and [“Viewing the iQuery Queue” on page 364](#).
- **Statistics:** IntelliSpace PACS System Administrators have access to a full range of statistics and billing information from this folder.
- **Study Lookup:** Allows you to search for and open a study using the Study Instance UID (SUID) number. See [“Searching for Study Instance UIDs” on page 416](#).
- **System Filters:** Contains the IntelliSpace PACS supplied system filters and any filters set up by your IntelliSpace PACS System Administrator. See [“Creating Filters” on page 158](#).
- **Personal Folders:** You can create private folders to create special collections of exam links for future reference. For example, you might want to save interesting cases for presentation or publication. You can add up to 25 sub-folders to each Personal Folder. A folder cannot contain more than 500 exam links and cannot be more than four levels deep. The contents of the Personal Folder are only visible to the user who created it. If you log out of IntelliSpace PACS on a certain computer and log back in on a different one, you will be the only one who can see your Personal Folders. Initially, the Personal folder is empty. You can add a comment to studies in Personal Folders. See [“Adding Comments to Studies in Personal or Public Folders” on page 73](#). You can also make patient information associated with exams in Personal Folders anonymous. See [“Making Patient Information Anonymous” on page 74](#).
- **Public Folders:** Like Personal Folders, Public Folders can be other folders you create, or links to clinical exams for other clinicians if you have permission to access public folders. The only difference between Personal and Public Folders is that the Public Folders can be viewed by all users. You can add a comment to studies in Personal Folders. See [“Adding Comments to Studies in Personal or Public Folders” on page 73](#). You can also make patient information associated with exams in Public Folders anonymous. See [“Making Patient Information Anonymous” on page 74](#).

Creating a New Folder

1. Right-click the folder in which you want to add the new folder.

2. From the menu, select **Add New Folder**.
3. A folder called **New Folder** is added. The name field is editable.
4. Enter the desired folder name.

Renaming a Folder

1. Right-click on a folder and from the menu, select **Rename**. The folder's name field becomes editable.
2. Enter the desired folder name.

Showing and Hiding the Folder List

Do one of the following:

- Click the arrow icon in the Shortcut Bar header, or right-click in the **Shortcut Bar** and from the menu, choose **Show Folder List**. Or, right-click in the **Shortcut Bar** and from the menu, select **Hide Folder List**.
- Click the **X** on the Folder List header.

Adding Exams to Folders

You can organize and store links to specific exams by adding exams to folders.

Do one of the following:

- Drag and drop an exam listing to a folder, as you would in Windows Explorer.
- Right-click in the exam margin or on the exam in the timeline, and from the menu select **Add Exam to Folder**. The **Folder** dialog box displays. Navigate to the folder where you want to place the new exam and click **OK**.

Copying Exams from Folders to Folders

1. Select the exam that you want to copy to another folder.
2. Hold the **Ctrl** key while dragging the exam to the desired folder. The exam is copied, rather than moved.

Adding Comments to Studies in Personal or Public Folders

1. Open the Personal or Public folder that contains the study for which you want to add a comment.
2. Right-click on the study and choose **Properties** from the menu. The **Edit Exam Details** dialog box displays.
3. Enter the desired **Comment**.
4. Click **OK**.

Making Patient Information Anonymous

When using IntelliSpace PACS for teaching presentations or demonstrations, you can make personal patient information associated with exams in Personal and Public folders anonymous. When you do this, IntelliSpace PACS substitutes actual patient information with randomly generated information for the **Patient Name**, **MRN**, **Accession Number** and **Date of Birth**. The **Sex** is not anonymized.

When a patient study is anonymized, the **Date of Birth** will be displayed as 01/01/original year of birth (Date/Month/Year). The anonymized Date of Birth will be displayed in **Patient Banner**, **Canvas Page**, **Screen Overlays** and **iExport dialog**.

NOTICE

When the date of birth is anonymized, the original year of birth of the patient will be retained. But, the date will be reset to "01" and the month will also be reset to "01".

You can view the properties of an anonymous exam after the random information has been generated, if you want to change any of this information. See [“Displaying or Editing Information about Anonymous Exam” on page 75](#).

When anonymous exams are opened in the Canvas Page, the substituted patient information is displayed, instead of the actual patient information in the Patient History timeline and in the Relevant Exams area.

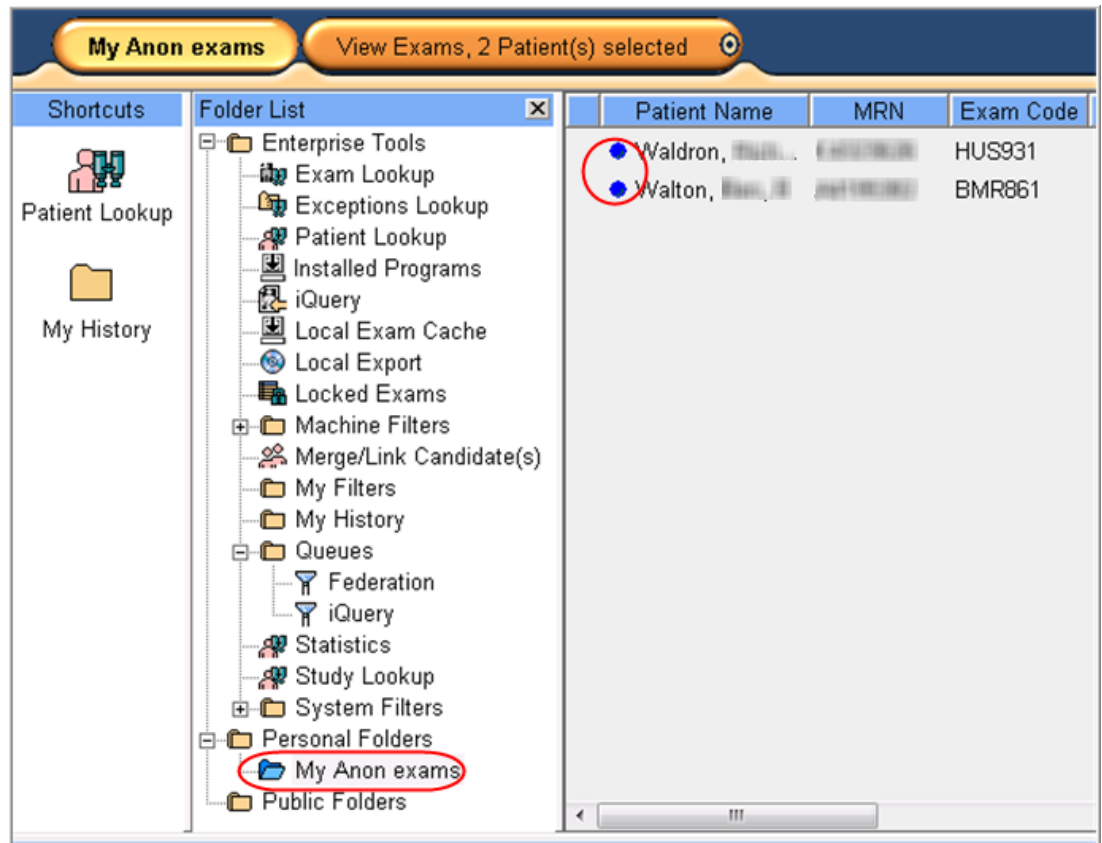
Note the following for anonymous exams:

- Certain features and menu items are disabled (including assigning a new study instance UID and deleting images).
- Screen overlays display the anonymous patient information.
- You can export exams with anonymous patient information to the Media Viewer and use the iExport tool for these exams. See [“Working with Anonymized Exams in the Media Viewer” on page 345](#) and [“iExport for DICOM Export” on page 348](#).
- You can enter comments (similar to exam notes) for anonymous exams by clicking on the icon in the Exam Margin on the Canvas Page. See [“Adding Comments to an Anonymous Exam” on page 76](#).
- Patient information you make anonymous in IntelliSpace PACS is not anonymous in program extensions (such as IntelliSpace PACS Volume Vision) or other third-party applications.

NOTE

If you have an exam opened as anonymous and then try to open the exam with the actual patient information, a message displays stating that the exam is already opened.

1. Drag the exams you want to make anonymous into the desired Personal or Public folder.
2. Right-click the folder that contains the exams you wish to make anonymous.
3. Select **Anonymous** from the menu. When selected, this menu item displays a check mark to the left of **Anonymous**. Anonymous exams are displayed with a blue dot to the left of the patient name, and the folder you right-clicked turns blue.



4. You can right-click the folder and click **Anonymous** again to deselect it and display the actual patient information for the selected exams.

Displaying or Editing Information about Anonymous Exam

When exams in a folder have been made anonymous, you can view and change the properties for the randomly generated patient information. This information is available from:

- The exam in a folder that has been made anonymous
- The Media Viewer
- The iExport window

NOTE

You can enter comments (similar to exam notes) for anonymous exams by clicking on the icon in the Exam Margin on the Canvas Page. See [“Adding Comments to an Anonymous Exam” on page 76](#).

1. When you have marked the folder as anonymous, right-click the exam and choose **Properties** from the menu. The **Anonymous Exam Details** dialog box displays.
2. View or edit the **First Name Middle Initial, Last Name, MRN, Accession #, DOB, Sex, Exam Date, Time, and Comments** for the anonymous exam.
3. Click **OK** when you are done.

Adding Comments to an Anonymous Exam

Comments allow IntelliSpace PACS users to communicate setup, non-diagnostic, or diagnostic information about a patient whose information has been made anonymous. They can range from generic comments about an exam, to preliminary findings (“wet reads”) that other clinicians can use in their decision making.

If you have the proper privileges, you can add, view, and delete comments in the **Comments** pane of the **Clinical Information** dialog box, accessed by clicking the icon in the Exam Margin on the Canvas Page.

1. Open an anonymous exam.
2. From the Canvas Page, click the icon in the Exam Margin.
3. Click **New Comment**. The **Subject** area becomes active.
4. Enter the subject of the comment. This appears in the summary when the comment is listed in the **Clinical Information** dialog box.
5. Type the comment. (You can also paste clipboard text from another application into the exam note using **Ctrl-V**.)
6. Click **Save Comment**. The comment is saved and summary information about the comment is displayed.

Viewing Comments for an Anonymous Exam

You select comments in the Comments window to view their content. The most recent comments are listed first. Summary information about the comments is displayed, including the date and time the comment was written, the author of the comment, and the subject. You can sort the notes by clicking on a column heading.

1. Open an anonymous exam.
2. From the Canvas Page, click the icon in the Exam Margin.
3. Select the comment you wish to view. The comment is displayed at the bottom of the dialog box.

Deleting Comments for an Anonymous Exam

1. Open an anonymous exam.
2. From the Canvas Page, click the icon in the Exam Margin.
3. Select the comment you wish to delete.
4. Click **Delete Comment**. A confirmation message displays.
5. Click **Yes** to delete the comment or **No** to cancel.

Working with VIP Patients

Certain patients, such as politicians, entertainers, and hospital employees, may be designated as VIPs (Very Important Persons) in IntelliSpace PACS. Accessing these patient records and performing all actions (such as opening exams, viewing images, copying exams to the Media Viewer, and so on) are audited. If a patient has a VIP status, a system-definable warning message is displayed, notifying the user that this is a sensitive patient record and displaying the patient name and MRN. For information on specifying the text for this message, see [“Setting General Preferences” on page 471](#).

After you click **Yes** in the **VIP Warning** message, it does not display again during the same IntelliSpace PACS session for that patient. The message will display for other VIP patients in that session. When you start a new session and access the same sensitive patient record, the message displays again and the new activities you perform on this record are audited.

If you select more than one VIP patient for an action, the message lists all the patient names and MRNs of the selected VIP patients. If you click **Yes** in this message, every action for all the listed patients will be audited. You cannot select a subset of patients in this message.

If the **Automatically open next unread exam from active filter after marking read** check box is selected in the General User Preferences and you attempt to open an exam for a VIP patient after marking an exam as having been read, a warning is displayed asking you to acknowledge the VIP status of the patient whose exam is about to be opened. You can click **Yes** to proceed and read this exam or click **Skip** to move to the next unread exam. See [“Setting General Preferences” on page 446](#).

Shortcuts Bar

The Shortcuts Bar allows you to quickly access your most frequently used folders, filters, and tools. The only time the Shortcuts Bar is not visible is when you view the Canvas Page. You cannot remove or hide the Shortcuts Bar, but you can resize it by clicking on the right border and dragging to the desired size.

Adding a Shortcut

1. Make sure the Folder List is displayed. If it is not, click the arrow icon in the Shortcut Bar header to display, or right-click in the Shortcuts Bar and from the menu, choose **Show Folder List**.

2. Do one of the following in the Folder List:
 - Drag an icon from the Folder List to the Shortcut Bar.
 - Right-click an item and from the menu, select **Create Shortcut**.

If you add more shortcuts than can fit in the Shortcuts Bar, a button displays. Click this button to scroll through your shortcuts.

Selecting an Item from the Shortcut Bar

Click the item. The features for that item display in the area to the right.

Removing a Shortcut

Right-click the shortcut and from the menu, select **Remove from Shortcut Bar**.

Renaming a Shortcut

Right-click the shortcut and from the menu, select **Rename Shortcut**. The name field becomes editable. Enter the desired name and press Enter.

Resizing the Shortcut Area

Place your cursor on the right divider of the Shortcuts Bar and drag the divider to the desired size.

Shortcut Groups

You can organize your shortcuts into shortcut groups. For example, you can create a shortcut group called “Filters” where you place all your filter shortcuts. You can add as many shortcut groups as you want. As you add groups, they are stacked in the Shortcut Bar. You can also drag items from the Folder List into a shortcut group.

Creating a Shortcut Group

1. Right-click on the body of the Shortcuts Bar and from the menu, select **Add New Group**. An editable text field called **New Group** is displayed at the bottom of the Shortcut Bar.
2. Enter a name for the new shortcut group and press Enter.
3. To access the shortcut group, click the header.

Renaming a Shortcut Group

1. Right-click the shortcut group name and from the menu, select **Rename Group**. The name field becomes editable.
2. Enter the desired name and press **Enter**.

Removing a Shortcut Group

1. Right-click the shortcut group name and from the menu, select **Remove Group**. A confirmation message displays.
2. Click **Yes**. Note that when you remove a group, you lose all the shortcuts in that group.

7 Finding and Managing Patient Information

Patient Lookup Overview

Patient Lookup is the first screen displayed when you log in. IntelliSpace PACS allows you to uniquely identify a person and track their care as they enter an organization and become a patient. You use the **Exam Lookup** to find and manage exams (see [“Exam Lookup Overview” on page 115](#) and the **Exception Lookup** (see [“Exceptions Lookup Overview” on page 169](#) to find and manage exceptions. You can view and search for exceptions in the **Patient Lookup** (see [“Viewing Exceptions in the Patient Lookup” on page 94](#).

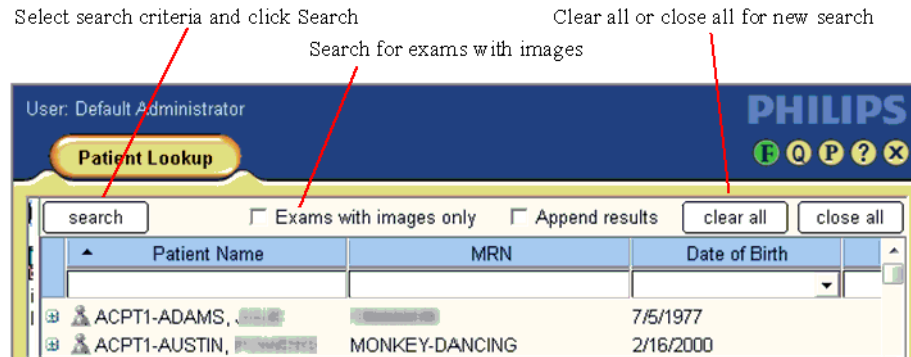


Fig. 21: Patient Lookup

Because healthcare organizations can vary significantly (from single hospitals, to an integrated delivery network consisting of multiple hospitals, imaging centers, or groups of primary care clinics), a person can have multiple patient identifiers. When this occurs, healthcare organizations may implement a Master Patient Index (MPI) system to guarantee the uniqueness of a person with multiple patient identifiers in those organizations. See [“Master Patient Index and Patient Demographics” on page 91](#).

IntelliSpace PACS maintains its own database of Organization IDs, Persons, and Patients. Each Person is associated with one or more Patients, and each Patient has an identifier (for example, an MRN and an Organization ID). The way the database of Person and Patient records gets created depends on how the IntelliSpace PACS database is set up and populated.



WARNING

When running a query using a patient’s MRN, it is possible that the non-numeric characters may be stripped from the MRN, possibly causing a mismatch of patient data between two or more patients. Make sure you validate the MRN against the patient name to ensure the returned patient data matches the patient you are looking for.

You can quickly find patients (with or without associated exams) based on a combination of search criteria. Patients whose records are based solely on exception studies are not displayed. You can search for patients based on any combination of the following. The search criteria in bold below must be displayed at all times:

- **Patient Name**
- **MRN**
- **Date of Birth**
- Social Security Number (see Note below)
- Organization

You can set a General User Preference to show and search for exceptions in the Patient List. See [“Setting General Preferences” on page 446](#) and [“Viewing Exceptions in the Patient Lookup” on page 94](#).

If you do not specify search criteria, IntelliSpace PACS displays the patient information that you can access that is associated with the most recent 200 exams. If additional patients match your criteria, the most recent patients are displayed with a message indicating that additional patients match your criteria. To find these additional patients, narrow your search by adding additional criteria. The System Administrator can set the maximum number of displayed exams up to 1,000, but the supplied value is 200 exams.

When a list of patient names is displayed, you can do the following:

- View and open exams: See [“Viewing Exam Information” on page 92](#)
- Select patients to link or merge: See [“Linking Patient Records from Different Organizations” on page 109](#) and [“Merging Patient Records from the Same Organization” on page 105](#)
- Right-click to display a menu with actions
- Rearrange and select certain search criteria columns to hide or display: See [“Rearranging Patient Lookup Columns” on page 95](#)
- **Shift-click** to select contiguous patient names or **Ctrl-click** to select multiple, non-contiguous patient names
- **Shift-click** to select contiguous exams or **Ctrl-click** to select multiple, non-contiguous exams

NOTE

You cannot view canceled exams in the Patient Lookup, but you can view these exams in the Exam Lookup, My Filters, System Filters, and Machine Filters. See [“Finding and Managing Exam Information” on page 115](#) and [“Filtering Worklists” on page 151](#).

PACS Administrators can set a System Preference to specify which columns are displayed in the Patient Lookup. See [“Setting Patient Columns Preferences” on page 513](#). The following columns can be displayed or hidden:

- Organization
- Sex

- SSN (see Note below)

NOTE

If the GID (Geographical Identification) feature is enabled on the IntelliSpace PACS server, the SSN field is replaced with the GID field. The GID (Geographical Identification) feature is available for specific region(s).

Patient Lookup and Federation

Federation is the joining of two or more independent PACS to allow clinicians to have a more complete view into a patient's history. It links disparate systems or sites with multiple iVaults, allowing a user logged into one iVault to see the same patient data in another iVault or another vendor's PACS.

Federation is available to sites that have the presence of a single patient identifier between the individual PACS; this means that the Patient ID (MRN) is issued consistently in all participating sites, and a person has the same MRN in all sites participating in the federation. However, if the federation does not have a uniform scheme for issuing MRNs, there are potential safety issues where an MRN from one organization within the federation matches the MRN of a different person in a second organization within the same federation. Thus, images and patient information might be incorrectly assigned to the wrong person.

**WARNING**

It is the customer's responsibility to make sure patients have unique patient identifiers (MRNs) within a federation.

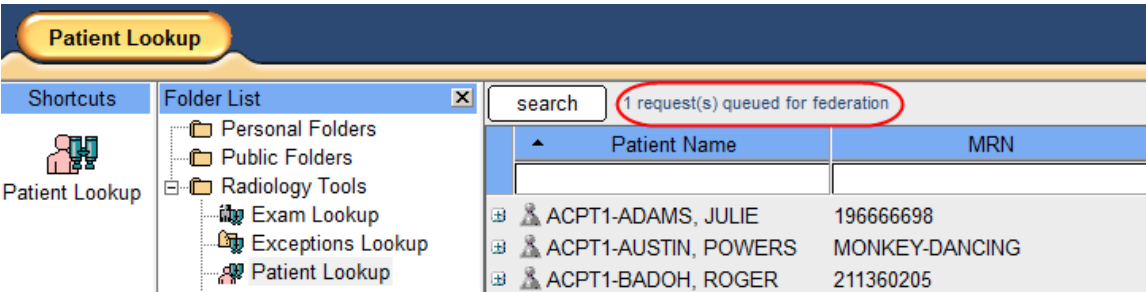
The Federated layer allows the following:

- iVaults and third-party PACS can form a union, with shared authorization and viewing privileges.
- A single, combined timeline for patients is provided, including studies that exist in multiple PACS systems.
- Enables physicians to access a current study from their local system and then access prior studies from any location in the Federation for comparison.
- Supports a heterogeneous environment: leveraging IHE standards when the appropriate systems are in place, and utilizing more traditional methods when they are not.
- If the user has permission to view patients and exams in the local PACS system, then the federation layer assumes that user has the right to view patients and exam in other PACS systems as well.

If your PACS system is part of a federation, you will see some additional icons and messages in the Patient Lookup screen. When you click **Search** in the Patient Lookup pane, the color of the **F** icon in the Control Strip may change color, depending on the search results. When Federation is activated, the default color of the **F** icon is light beige/tan, the same color as the other icons in the Control Strip. See the following table for an explanation of the different colors for this icon.

Color of F Icon	Description
	Appears as light tan/beige. Federation is activated.
	Appears light gray. Federation has been de-activated by the user for that same client instance.
	Appears green. Federation is active and functioning properly.
	Appears amber (yellow-orange). The message “Some locations in the federation could not be reached” displays in the Control Strip, meaning that Federation did not get a response from all sites within the Federation, but some sites did respond.
	Appears red. The error message “An error occurred when accessing the federation” displays in the Control Strip, meaning that the Federation query did not go through. Users will only see exams from their local PACS.

In Patient Lookup, when you click the + sign next to a patient’s name to display the list of available exams for that patient, a message appears next to the Search button.



If you click several + signs in rapid succession, the number of requests displays as that same number of + signs clicked. For example, if you click three + signs in the patient list quickly, the message will read as **3 requests queued for federation**.

As exams are downloaded from the federation, a letter marker is added to the left of the modality type and the exam icon is not displayed. In addition, the organization will display as **Federation**.

search		☐ Exams with images only		☐ Append r	
Patient Name	MRN	Date of Birth	SSN		
ACPT1-ADAMS, JULIE	196666698	7/5/1977			DI
ACPT1-AUSTIN, POWERS	MONKEY-DANCING	2/16/2000			DI
ACPT1-BADDOH, ROGER	211360205	12/21/1946			DI
ACPT1-DODGE, RITA	96095155	2/5/1918			DI
CR - No Descriptions	Acc: 4236873	Date: 11/3/1999 13:17:21	Org: DEFAULT		
CT - No Descriptions	Acc: 4236867	Date: 11/3/1999 10:12:58	Org: DEFAULT		
CT - No Descriptions	Acc: 4154692	Date: 8/25/1999 13:57:59	Org: DEFAULT		
CR - No Descriptions	Acc: 4154568	Date: 8/24/1999 14:29:14	Org: DEFAULT		
T CR - No Descriptions	Acc: 4093012	Date: 7/28/1999 20:33:56	Org: Federation		
T CR - No Descriptions	Acc: 4093013	Date: 7/28/1999 20:33:22	Org: Federation		
R CR - No Descriptions	Acc: 4093027	Date: 7/28/1999 20:32:18	Org: Federation		
R CT - No Descriptions	Acc: 4093042	Date: 7/28/1999 19:41:46	Org: Federation		
R CT - No Descriptions	Acc: 4066386	Date: 7/19/1999 23:27:07	Org: Federation		
R CR - No Descriptions	Acc: 4058452	Date: 7/16/1999 18:29:14	Org: Federation		
R CR - No Descriptions	Acc: 4053020	Date: 7/12/1999 2:08:04	Org: Federation		
R CR - No Descriptions	Acc: 4033648	Date: 7/2/1999 1:54:51	Org: Federation		
R CR - No Descriptions	Acc: 3761586	Date: 2/19/1999 2:07:57	Org: Federation		

- The marker **R** displays to show that remote exams have been identified in the federation.
- Right-click the Remote Exam and the shortcut menu displays the options
 - Show Report** – only if a report is present for the remote exam; a gray report icon will display to the left of the **R** marker. The **Show Report** menu item will fetch all reports for a particular exam with relevant report status.

Clinical Information: Diagnostic Report

BABY, PETE, MRN: 510-06-000-5613BC90, Sex: M, DOB: 4/22/2009

Ordering MD: N/A

Accession #: 5613BC900001

Visit Location: Location

Phone: N/A

Exam Code: SMR720

Pager: N/A

Location: STM44ST02:Location

Diagnostic Report

Patient Information

Name: PETE BABY
Medical Record Number: 510-06-000-5613BC90
Sex Code: M
BirthDate: 4/22/2009
SSN: 123-45-6789
Home Phone Number: +1(905)555-1212
Work Phone Number: +1(905)555-3232

Exam Information

Accession Number: 5613BC900001
Description: MR BREAST W
Performed Date: 10/6/2015 5:50:32 PM
Patient History: History
Reason for Study: Signs and Symptoms
Comments: Comments

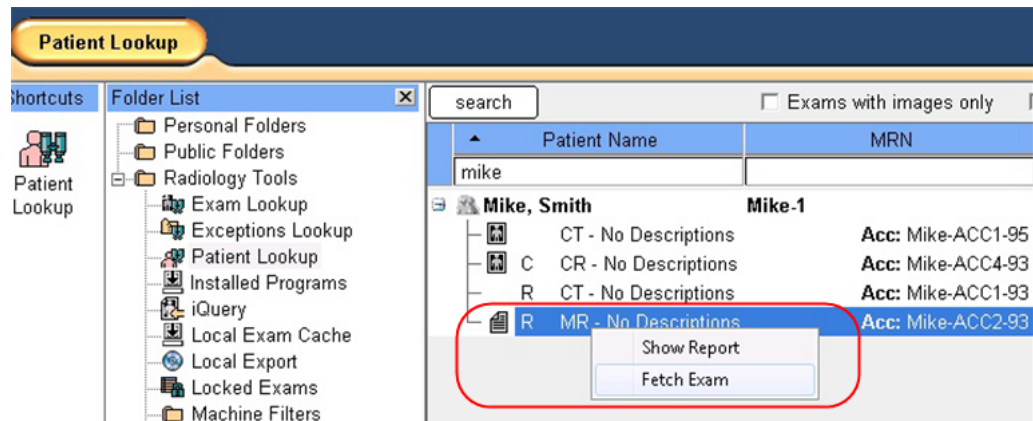
Final Report

Print

Close

The Current tab is used to view the current report and History tab is used to view the historical reports.

- **Fetch Exam** – select this option to have the exam fetched and then cached locally.



- The marker **T** displays when the exam is in the process of being transferred from the federation to the local PACS.

search	Exams with images only						Append results	clear all	close
Patient Name	MRN	Date of Birth	SSN	Organization					
ACPT1-ADAMS, JULIE	19666698	7/5/1977		DEFAULT	U				
ACPT1-AUSTIN, POWERS	MONKEY-DANCING	2/16/2000		DEFAULT	U				
ACPT1-BADDOH, ROGER	211360205	12/21/1946		DEFAULT	U				
ACPT1-DODGE, RITA	96095155	2/5/1918		DEFAULT	U				
CR - No Descriptions	Acc: 4236873	Date: 11/3/1999 13:17:21	Org: DEFAULT						
CT - No Descriptions	Acc: 4236867	Date: 11/3/1999 10:12:58	Org: DEFAULT						
CT - No Descriptions	Acc: 4154692	Date: 8/25/1999 13:57:59	Org: DEFAULT						
CR - No Descriptions	Acc: 4154568	Date: 8/24/1999 14:29:14	Org: DEFAULT						
T CR - No Descriptions	Acc: 4093012	Date: 7/28/1999 20:33:56	Org: Federation	Loc: ImagingCentre					
T CR - No Descriptions	Acc: 4093013	Date: 7/28/1999 20:33:22	Org: Federation	Loc: ImagingCentre					

- The marker **C** displays when the exam has already transferred and is cached locally. You can open an exam marked "C" as a main exam in the canvas page.
- You must first open a local exam as the main exam, and then open the cached exam as a prior

search	Exams with images only						Append results	clear all	close
Patient Name	MRN	Date of Birth	SSN	Organization					
ACPT1-ADAMS, JULIE	19666698	7/5/1977		DEFAULT	U				
ACPT1-AUSTIN, POWERS	MONKEY-DANCING	2/16/2000		DEFAULT	U				
ACPT1-BADDOH, ROGER	211360205	12/21/1946		DEFAULT	U				
ACPT1-DODGE, RITA	96095155	2/5/1918		DEFAULT	U				
CR - No Descriptions	Acc: 4236873	Date: 11/3/1999 13:17:21	Org: DEFAULT						
CT - No Descriptions	Acc: 4236867	Date: 11/3/1999 10:12:58	Org: DEFAULT						
CT - No Descriptions	Acc: 4154692	Date: 8/25/1999 13:57:59	Org: DEFAULT						
CR - No Descriptions	Acc: 4154568	Date: 8/24/1999 14:29:14	Org: DEFAULT						
C CR - No Descriptions	Acc: 4093012	Date: 7/28/1999 13:33:56	Org: Federation	Loc: ImagingCentre					
C CR - No Descriptions	Acc: 4093013	Date: 7/28/1999 13:33:22	Org: Federation	Loc: ImagingCentre					
R CR - No Descriptions	Acc: 4093027	Date: 7/28/1999 20:32:18	Org: Federation	Loc: ImagingCentre					

NOTE

Third-party plug-ins cannot access remote exams.

Besides the letter markers (R, T, C), the organization displays as **Federation**, the name of the remote location displays, as does the size of the exam.

When the Federation icon is amber, you can right click the icon and get a context menu that tells you how many locations are missing.

Some locations in the federation could not be reached

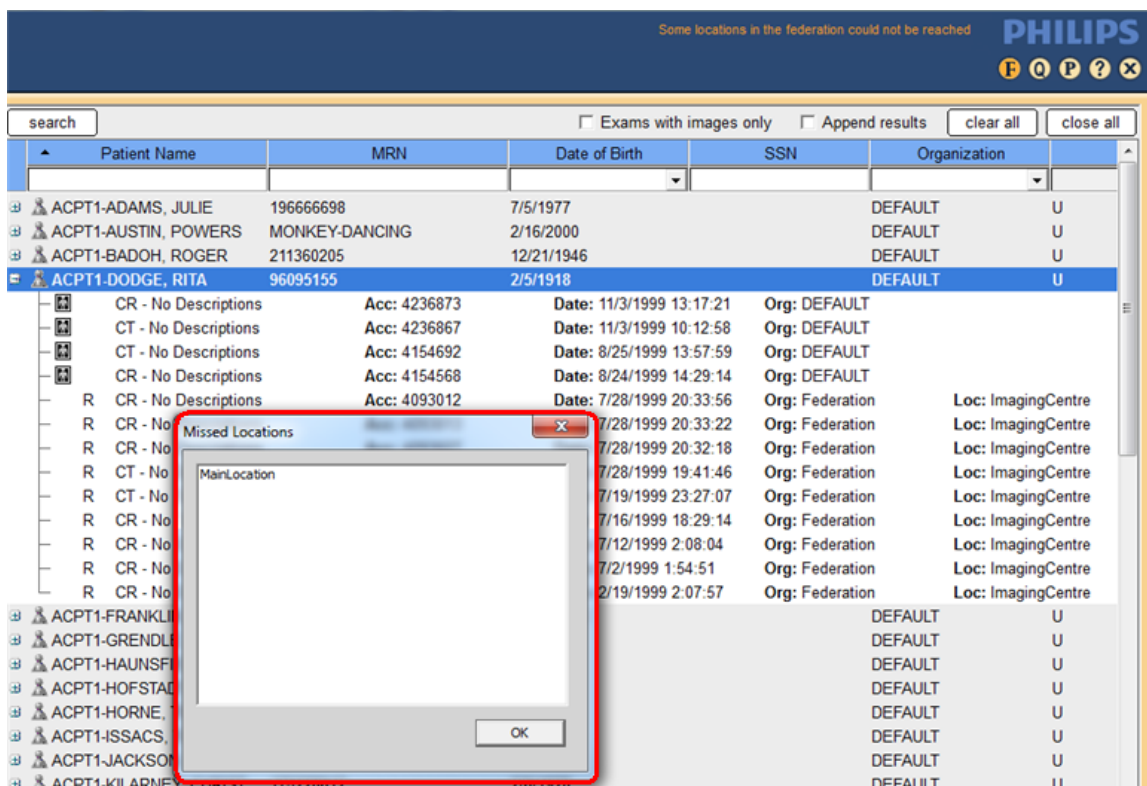
PHILIPS

1 Missed Locations

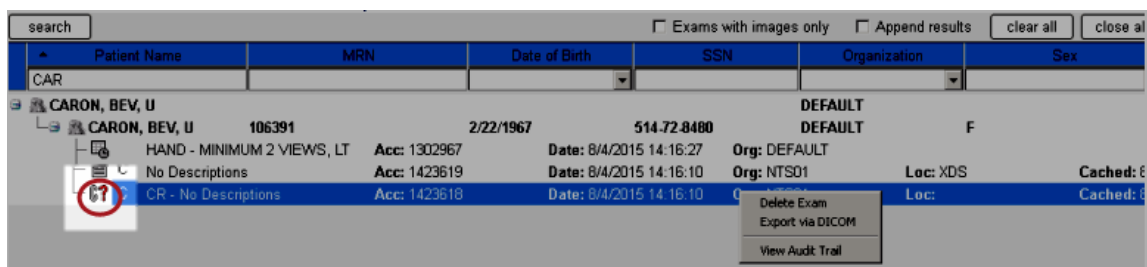
☐ Exams with images only ☐ Append results

Date of Birth	SSN	Organization	
7/5/1977		DEFAULT	U
2/16/2000		DEFAULT	U
12/21/1946		DEFAULT	U
2/5/1918		DEFAULT	U
Date: 11/3/1999 13:17:21	Org: DEFAULT		
Date: 11/3/1999 10:12:58	Org: DEFAULT		
Date: 8/25/1999 13:57:59	Org: DEFAULT		
Date: 8/24/1999 14:29:14	Org: DEFAULT		
Date: 7/28/1999 20:33:56	Org: Federation	Loc: ImagingCentre	
Date: 7/28/1999 20:33:22	Org: Federation	Loc: ImagingCentre	

Clicking **Missed Locations** opens the **Missed Locations** pop-up, which displays the name(s) of each missed location. Once you have viewed the information, click **Close** to close the dialog.



A question mark appears against a cached exam in the federation timeline, when a response from the remote site does not include the exam details.



This can happen due the following reasons:

- The exam is either deleted or deprecated (in XDS configuration) in the remote site, from where the study originated.
- The client did not receive any response from the remote site as part of the timeline query.
- If the exam's attribute (mostly Accession Number) was updated in the remote site.

NOTE

The users are advised to check and delete the cached exam from the local site, if the exam is no longer relevant.

NOTE

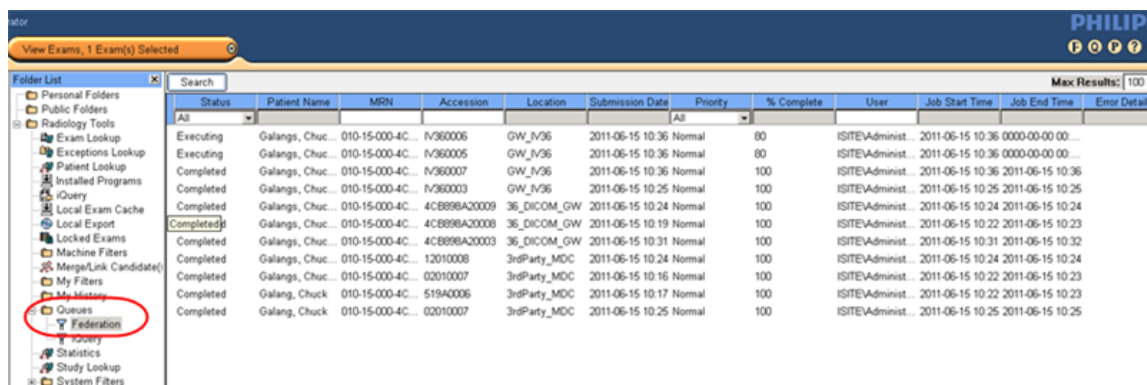
The “Refresh Exam” functionality is not available for such cached exams, however the federated cached exams will be available for viewing in the Canvas page.

Viewing the Federation Queue

When exams are in the process of being transferred from the Federation to the local system, you can click **Queues** in the Folder list, and then click **Federation** to view the status of the exams being transferred. Note that the Federation queue is only visible when you have the **View Queue** and **Manage Queue** permissions.

NOTE

The maximum number of exams that can be displayed in the Federation queue is 100. This number displays in the Max Results: field in the upper right corner below the Control Strip.



Status	Patient Name	MRN	Accession	Location	Submission Date	Priority	% Complete	User	Job Start Time	Job End Time	Error Details
Executing	Galangs, Chuc...	010-15-000-4C...	I360006	GW_N/36	2011-06-15 10:36	Normal	80	ISITEVAdminist...	2011-06-15 10:36	0000-00-00 00:...	
Executing	Galangs, Chuc...	010-15-000-4C...	I360005	GW_N/36	2011-06-15 10:36	Normal	80	ISITEVAdminist...	2011-06-15 10:36	0000-00-00 00:...	
Completed	Galangs, Chuc...	010-15-000-4C...	I360007	GW_N/36	2011-06-15 10:36	Normal	100	ISITEVAdminist...	2011-06-15 10:36	2011-06-15 10:36	
Completed	Galangs, Chuc...	010-15-000-4C...	I360003	GW_N/36	2011-06-15 10:25	Normal	100	ISITEVAdminist...	2011-06-15 10:25	2011-06-15 10:25	
Completed	Galangs, Chuc...	010-15-000-4C...	4C8898A20009	36_DICOM_GW	2011-06-15 10:24	Normal	100	ISITEVAdminist...	2011-06-15 10:24	2011-06-15 10:24	
Completed	Galangs, Chuc...	010-15-000-4C...	4C8898A20008	36_DICOM_GW	2011-06-15 10:19	Normal	100	ISITEVAdminist...	2011-06-15 10:22	2011-06-15 10:23	
Completed	Galangs, Chuc...	010-15-000-4C...	4C8898A20003	36_DICOM_GW	2011-06-15 10:31	Normal	100	ISITEVAdminist...	2011-06-15 10:31	2011-06-15 10:32	
Completed	Galangs, Chuc...	010-15-000-4C...	12010008	3rdParty_MDC	2011-06-15 10:24	Normal	100	ISITEVAdminist...	2011-06-15 10:24	2011-06-15 10:24	
Completed	Galangs, Chuc...	010-15-000-4C...	02010007	3rdParty_MDC	2011-06-15 10:16	Normal	100	ISITEVAdminist...	2011-06-15 10:22	2011-06-15 10:23	
Completed	Galang, Chuck	010-15-000-4C...	519A0006	3rdParty_MDC	2011-06-15 10:17	Normal	100	ISITEVAdminist...	2011-06-15 10:22	2011-06-15 10:23	
Completed	Galang, Chuck	010-15-000-4C...	02010007	3rdParty_MDC	2011-06-15 10:25	Normal	100	ISITEVAdminist...	2011-06-15 10:25	2011-06-15 10:25	

The following fields display in the Federation queue:

- **Status:** The Status field is editable, in that you can click the dropdown arrow and then select a status to further narrow the query. The available options are:
 - Submitted: the query has been submitted and is waiting to execute the transfer
 - Executing – the transfer of the exam is in process
 - Completed – the transfer of the exam is complete
 - Cancelled – you can select this option to change the status of an exam only if the exam is in the Submitted state.
 - Failed – the exam failed to transfer
- **Patient Name:** name of the patient
- **MRN:** MRN for the patient
- **Accession:** Accession # of the patient’s exam (maximum length is 20 characters)
- **Location:** Federation location where the original exam resides

- **Submission:** date the query was submitted
- **Priority:** This field can be set only when the exam is in the Submitted state. Options are:
 - Normal: default value
 - Urgent
 - Stat
- **% Complete:** Displays how far along in the transfer process an exam is
- **User:** the person who submitted the query
- **Job Start Time:** the time the job execution started for the first time
- **Job End Time:** the time when the job execution completed or Failed.
- **Error Details:** Gives the details of any errors.

The exams in the Federation queue stay in the queue until you delete them. To delete one or more exams in the queue, select them, right-click, and then click **Delete**.

NOTE

Requests that are in the executing state cannot be deleted.

For more information about Federation and the Canvas Page, see [“Federation and the Patient History Timeline” on page 192](#).

Searching for Patients

1. If it isn't already displayed, select **Patient Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. Enter the desired search criteria. (Note that you cannot use **Sex** as a search criteria.)

The following characters are not supported as part of the search criteria:

<>

()

=

|

&

;

;

3. If you only want to find patients with exams that have images, select the **Exams with images only** check box.
4. Press **Enter** or click **Search**. A list of patients who match your search criteria is displayed. If no patients match, IntelliSpace PACS displays a message in the Control Strip.

NOTE

If you do a new search, the old results are removed unless you select the Append results check box or you expanded a patient's record to display that patient's exam list. See [“Appending Patients to an Existing List” on page 96](#).

NOTE

When the values in the organization field is selected as part of the search criteria, it remains persistent.

NOTE

- When search button in the Patient Lookup is pressed without adding any specific search parameters, by default up to a maximum of 200 patients if available is listed.
- In case the total count of patients is less than 200, this list is ordered alphabetically.
- In case the total count of patients is greater than 200, for example 300, then the Exam Date/Time is used to pick the 200 patients for display. These 200 patients are then ordered alphabetically and displayed.

Master Patient Index and Patient Demographics

In a PACS system, there are typically three methods for combining data driven from disparate patient management systems into a single, comprehensive patient record:

- **Master Patient Index (MPI):** MPI functionality is typically used by larger healthcare organizations. Using an MPI allows organizations to bring disparate patient management systems together under a single umbrella. The primary benefit to an MPI is the ability to maintain a comprehensive patient record, even across disparate patient management systems where patients may have demographics that are dissimilar enough to each other that they would not be combined by a PACS-driven linking algorithm.
- **PACS-driven Linking:** Upon receipt of an HL7 message, which creates a patient, PACS uses an algorithm that compares demographics to extant patients in the PACS and automatically builds a link between the disparate patient records when the demographics match sufficiently. See [“Linking Patient Records from Different Organizations” on page 109](#).
- **Manual Linking/Merging:** A customer may manually link patient records in the PACS to create a single history. See [“Resolving Merged or Linked Patient Records” on page 101](#) and [“Using the Merge/Link Candidates List to Merge or Link Patients” on page 103](#).

IntelliSpace PACS supports organizations that use an MPI as well as those organizations who do not use an MPI. The following are features of IntelliSpace PACS' support of MPI:

- Receipt of Master Patient Index via the HL7 interface is supported.
- IntelliSpace PACS provides configuration to allow control over whether or not demographics changes to a local patient can be applied to the MPI patient via the HL7 feed.

- IntelliSpace PACS allows MPI to be added to a patient record upon either creation of the patient record in IntelliSpace PACS or at a later date.
- IntelliSpace PACS provides the ability to search for patients in the graphical user interface (GUI) via MPI when the capability to search by Medical Record Number (MRN) is provided in the MPI organization (Enterprise).

Viewing Exam Information

You can view a summary of a patient's exams in a list of patients. The following information displays for each exam, starting with the most recent:

- Modality type
- Exam description
- Accession # (maximum length is 20 characters)
- Date and time of order/exam (if no studies have been received) or of studies if they have been received
- Organization (ORG) in which the exam was created

One of the following icons display next to the exams. If there is no icon, no images are available for the exam.

Icon	Description
	Image(s) available
	Exam is scheduled
	Report is available for exam
No icon	No images are available

1. Search for and display a patient or list of patients.
2. Click the plus (+) sign to the left of a patient's name. If the patient has associated exams, they display below the name, with the most recent exam displayed first.
3. Double-click on an exam to open it, or right-click to display a menu with various actions, including **Create Exam** and **View Exam Notes**. To open an exam without locking it, press and hold the **Alt** key while double-clicking on the exam.
4. Click the minus (-) sign to close the list of exams. You can also click **Close All** to close all displayed exams in a list of patients.

Searching for Patients by Name

You can search for patients by entering their last and first name or by using a wildcard search. For example, to find patient Doe, John you can search for the full name (Doe, John), full last name and partial first name (Doe, J) or partial last name (D). There is also a wildcard search option that allows you to search on a partial last name and “%” and partial or full first name (for example “D%, Joh”).

1. If it isn't already displayed, select **Patient Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. Enter all or part of the patient's last name followed (optionally) by a wildcard character (%), a comma (,) and all or part of the first name (for example, “Sm%, J” will match “Smith, Joyce” and “Smithy, Jim”).
3. Click **Search** or press **Enter**. Patients who match the name search criteria are displayed.

Searching for Patients by Identifier

If two or more healthcare organizations want to integrate their systems, they can use an MPI patient identifier to enforce the uniqueness between organization identifiers, and to link patients across organizations. IntelliSpace PACS supports customers who currently use MPIs as well as those who don't use MPI now, but plan to. The ability to search for patients by MRN or MPI number lets you use IntelliSpace PACS to link patients with different MRNs together under one MPI.



WARNING

When running a query using a patient's MRN, it is possible that the non-numeric characters may be stripped from the MRN, possibly causing a mismatch of patient data between two or more patients. Make sure you validate the MRN against the patient name to ensure the returned patient data matches the patient you are looking for.

1. If it isn't already displayed, select **Patient Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. Enter all or part of the name or number of the patient identifier (usually known as a Medical Record Number (MRN) but sometimes known as a department ID). You do not need to enter leading zeros or the rightmost characters for MRN numbers. You can also enter a Person Identifier (Master Patient Index or MPI) that identifies a person across multiple healthcare organizations, each of which may know this person as a patient.
3. Click **Search** or press **Enter**. Patients who match the identifier search criteria are displayed.

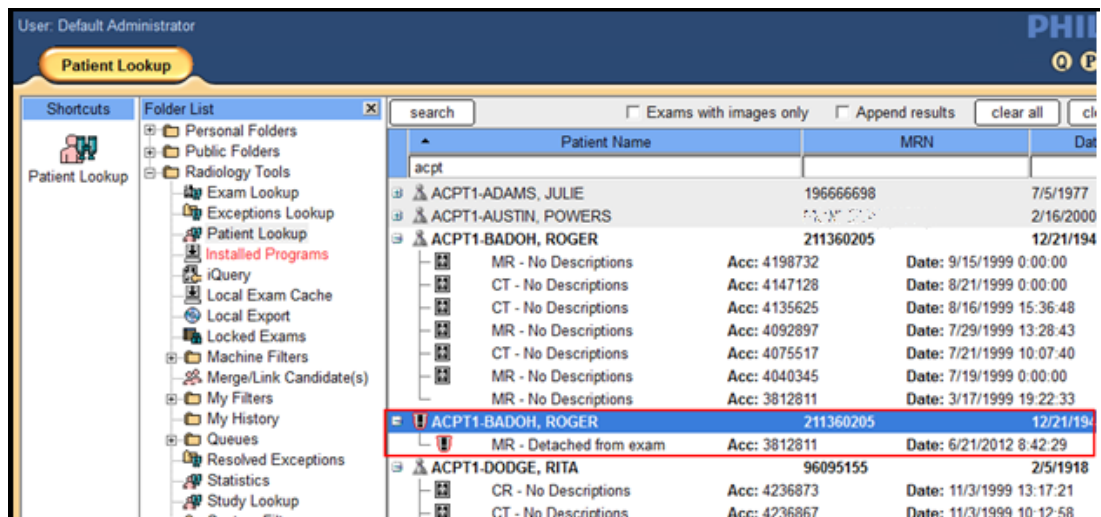
Searching for Patients by Other Criteria

1. If it isn't already displayed, select **Patient Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).

2. Enter the patient's **Date of Birth**, **Social Security Number**, select an **Organization**, or select the **Exams with images only** check box.
 - **Date of Birth:** Enter the date or click the button in the field to select the date from a calendar control. Use **Ctrl-X** or the **Backspace** key to clear the date field.
 - **Social Security Number:** Enter the exact Social Security Number (SSN). The SSN cannot be more than 50 characters.
 - **Organization:** Select the name(s) of the organization(s). If you search for patients in a specific organization, the patients in that organization are displayed, as well as patient records that are linked to the organization (when the patient record is expanded by clicking on the plus icon).
 - **Exams with images only:** Select this check box if you only want to find patients with exams that have images.
3. Click **Search** or press **Enter**. Patients who match the search criteria are displayed.

Viewing Exceptions in the Patient Lookup

1. Verify that the General User Preference **Show Exceptions in Patient List** has been set.
2. If it isn't already displayed, select **Patient Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
3. Enter the desired search criteria. (Note that you cannot use **Sex** as a search criteria.)
4. Press **Enter** or click **Search**. A list of patients with exams and exceptions who match your search criteria is displayed, with an exclamation mark icon to the left of the patient name. Patients with exams are listed first. Exceptions with the same name as patients are listed after the last patient name. If no patients match, a message displays in the Control Strip.



5. Double-click the exception to open it in the Canvas Page.
- Note the following:

- If you do a new search, the old results are removed unless you select the **Append results** check box or you expanded a patient's record to display that patient's exam list.
- By design, the top 200 exceptions are displayed.
- There is no context (right-click) menu for exceptions in the Patient Lookup.

Clearing a List of Patients

If you have a list of patients displayed, you can clear the patients in the list by starting a new search or by clicking **Clear All**.

- With patients displayed in the **Patient Lookup**, click **Clear All**. All names in the list are removed.

Closing a List of Patients

If you have exams displayed in the list of patients, you can close the exams individually by clicking the - icon to the left of the patient name. You can also close the exams for all patients in the list at the same time.

With patients and exams displayed in the **Patient Lookup**, click **Close All**. The exams for all patients in the list are closed, so that only the patient names are listed.

Showing or Hiding Patient Lookup Columns

You can show or hide any **Patient Lookup** columns except **Patient Name**, **MRN**, and **Date of Birth**.

1. Right-click in the column area, above the list of patient names.
2. Select the columns you want to show or hide. Shown columns are checked; hidden columns are unchecked.
3. Repeat steps 1 and 2 as required.

Rearranging Patient Lookup Columns

You can click and drag **Patient Lookup** columns to rearrange their order, except for **Patient Name** and **MRN**. This allows you to customize the order in which patient information is displayed.

Click and drag a column to the position you want, and release the mouse button.

Appending Patients to an Existing List

You can use **Append results** to build a list of patients by specifying different search criteria. For example, you can search for two different MRNs, or to find two patients you wish to link or merge.

1. If it isn't already displayed, select **Patient Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. Search for the first set of patients using one set of search criteria.
3. When the list of patients is displayed, select the **Append results** check box and enter the next set of search criteria.
4. Click **Search** or press **Enter**. The new search results are added to the original list.

Sorting Results

The list is automatically sorted by patient name in alphabetical order.

Click the blue column heading that you want to sort by. An arrow appears in the column heading to display whether the order is ascending (A-Z or 1-9) or descending order (Z-A or 9-1). To reverse the order, click the same column heading again.

Patient Management Overview

IntelliSpace PACS includes the following features you can use to manage patient records. You access these features by right-clicking over a patient name in the **Patient Lookup** and selecting an option from the menu. A separate set of actions is available when you right-click on an exam instead of a patient. See [“Viewing Exam Information” on page 92](#).

- **Export via DICOM:** See [“iExport for DICOM Export” on page 348](#)
- **Create Patient:** See [“Creating Patient Records” on page 97](#)
- **Create Linked Patients:** See [“Creating Linked Patients” on page 97](#)
- **Edit Patient:** See [“Editing Patient Records” on page 98](#)
- **Delete Patient:** See [“Deleting Patient Records” on page 101](#)
- **Link Patients:** See [“Linking Patient Records from Different Organizations” on page 109](#)
- **Merge Patients:** See [“Merging Patient Records from the Same Organization” on page 105](#)
- **Create Exam:** See [“Creating Exams” on page 111](#)

You can also display a list of potential duplicate patient records to merge or link in the **Merge/Link Candidate(s)** list. See [“Resolving Merged or Linked Patient Records” on page 101](#).

Creating Patient Records

Most of the time, patient records are created through HL7 or through auto-create. But IntelliSpace PACS also allows users with the proper privileges to create and edit patient records manually. You create a patient by entering an MRN, demographic information, and contact information.

NOTE

Refer to your local policy on creating new exam in IntelliSpace PACS before using the Create Patient feature. If you have HIS/RIS integration, patients created in IntelliSpace PACS will not be synchronized in your HIS/RIS.

1. Use the **Patient Lookup** to search for and display a list of patient names.
2. Right-click over a list of patients, and from the menu choose **Create Patient**. The **Create Patient** dialog box displays with the **Demographics** pane displayed.
3. From the **Organization** list, select the organization to which the patient belongs. Only organizations to which you can add a patient record are listed.
4. Enter the **Medical Record Number** (MRN) for the patient (mandatory). This number must be unique within the organization, and cannot be more than 45 alphanumeric characters. The MRN you enter is displayed in the header of the **Create Patient** dialog box.
5. Enter the patient's first, middle, and last names. The first and last names are mandatory. The name you enter is displayed in the header of the **Create Patient** dialog box.
6. From the **Sex** list, choose the patient's gender. The sex you select is displayed in the header of the **Create Patient** dialog box.
7. Enter the patient's date of birth. Either type in or click the up or down arrows to change the date. Use Ctrl-X or the Backspace key to clear the date field. The date of birth you enter is displayed in the header of the **Create Patient** dialog box.
8. Click **Contact Info**. The **Contact Info** pane displays.
 - Optionally, enter the patient's address and phone number(s).
9. Click **Save** to save the information and close the dialog box. If the MRN is already in use, a message displays when you click **Save**, prompting you to change the MRN and try again.

Creating Linked Patients

To create Linked Patients belonging to different organizations, perform the following steps:

Organization	MRN
DEFAULT	5655
Enterprise	56586
Saw	5656
TEST	56567
Test123	5656

1. Click **Create Linked Patient** tab, Organization and MRN options are displayed with the values entered in the demographics pane.

NOTE

If organization selection is changed in the demographics page then in the Create Linked Patient page the first row is updated with the organization selected and all other previously added rows will be deleted.

2. To add a new Organization, click on “+” icon and from the **Organization** list, select the organization to which the patient belongs and enter the MRN for the patient.
The maximum number of Organizations or MRNs allowed is seven.
3. To remove patients from the patients list, select the checkbox corresponding to the patients you want to delete and click on “-” icon.
4. Click **Save** to save the information and close the dialog box. If the MRN is already in use, a message displays to indicate that the MRN already exists.

Editing Patient Records

You can use the **Edit Patient** dialog box to modify demographic or contact information or MRN of linked patient for an existing patient, or to view or remove links from patient records. However, you cannot update the patient’s organization.

**WARNING**

After you edit patient-related demographics, the updates are not immediately propagated to other parts of IntelliSpace PACS.

NOTE

Refer to your local policy on creating new exam in IntelliSpace PACS before using the Edit Patient feature. If you have HIS/RIS integration, patients edited in IntelliSpace PACS will not be synchronized in your HIS/RIS.

1. Use the **Patient Lookup** to search for and display a list of patient names.
2. Right-click on the patient you want to edit, and from the menu choose **Edit Patient**. The **Edit Patient** dialog box displays with the **Demographics** pane displayed.
3. Optionally, do the following:
 - Edit the patient's Medical Record Number (MRN). The MRN is displayed in the header of the **Edit Patient** dialog box.
 - Edit the patient's first, middle, and last names. The first and last names are mandatory. The name is displayed in the header of the **Edit Patient** dialog box.
 - From the **Sex** list, edit the patient's gender. The sex you enter is displayed in the header of the **Edit Patient** dialog box.
 - Edit the patient's date of birth. Either type in or click the up or down arrows to change the date. Use **Ctrl-X** or the **Backspace** key to clear the date field. The date of birth displayed in the header of the **Edit Patient** dialog box.
4. Click **Contact Info**. The **Contact Info** pane displays.
5. Optionally, edit the patient's address and phone number(s).
6. Click **Links**. The **Link** pane displays the patients who are linked to the patient you're editing.

First Name	Last Name	MRN	Organization
abc	abc	4t5467374804344	DEFAULT
abc	abc	436S6Tt00061777a4344	TEST

- Review the linked record.
 - To edit MRN of the linked patients, click on **MRN** cell of the desired patient and modify the MRN. Click **Save** to save MRN changes for that patient. User must have edit patient permissions for that particular organization to modify MRN. Worklist needs to be refreshed to see the edited changes.
 - To unlink the patient records, select the record and click **Remove Link**. A message displays to confirm the changes made. Click **Yes** to unlink or **No** to cancel.
7. Click **Save** to save the information and close the dialog box. If the MRN is already in use, a message displays when you click **Save**, prompting you to change the MRN and try again.

The following characters are not supported in the Edit Patient dialog box:

<>
 ()
 =
 |
 &
 ;

Deleting Patient Records

If you have the proper privileges, you can delete patient records. You must enter a reason for the deletion, which is included in the audit log. You can either select a pre-defined reason (created in the **Reason Dictionary**) or enter a free-text reason.

Note the following about deleted patient records:

- All studies associated with the deleted patient record become exceptions.
- The MRN (patient identifier) of a deleted patient can be reclaimed and assigned to another patient.
- When you delete a patient who has been linked to another patient, the link is removed and the linked patient's record is not changed or deleted.
- You cannot undo deleting a patient record.



WARNING

The Delete Patient option has been identified as a hazard area in IntelliSpace PACS that could result in no diagnosis or a delayed diagnosis. Philips strongly recommends that you take the following precautions when deleting patient records:

- **Regularly backup your system—only data that has been saved to a backup medium can be restored to your database; if you need to restore a patient record that was deleted in error to your database, you will need a backup medium from which to retrieve the erroneously deleted record.**
- **Visually verify the patient record before deleting.**

1. Use the **Patient Lookup** to search for and display a list of patient names.
2. Right-click on the patient name you want to delete, and from the menu choose **Delete Patient**. The **Delete Patient** dialog box displays.
3. Do one of the following:
 - In the **Predefined Reason(s)** list, select the reason you want to delete the patient.
 - In the **Predefined Reason(s)** list, select the reason you want to delete the patient and enter additional text to elaborate on the reason.
 - Enter a free-text reason.
4. Click **Delete**.

Resolving Merged or Linked Patient Records

Patient merging is a critical feature of any healthcare information system. Unfortunately, it is not uncommon for a single patient to end up with duplicate records in a single system. As a result, the patient record becomes fragmented, meaning clinical decisions can be made with incomplete information, which can be a patient care issue.

There are two options for handling patient merges in IntelliSpace PACS:

- **Automatically:** IntelliSpace PACS provides the option to automatically merge patients upon receipt of an HL7 merge message (such as HL7 ADT:A40). IntelliSpace PACS does not require additional confirmation to merge patients when this option is used.
- **Manually:** IntelliSpace PACS provides the option to populate the **Merge/Link Candidates List** upon receipt of an HL7 merge message (such as HL7 ADT:A40). IntelliSpace PACS does require manual confirmation to merge patients when this option is used.

Multiple MRN/ACC Issuer without MPI

When a patient is created without a Master Patient Index (MPI), IntelliSpace PACS attempts to associate the new patient with existing patients in other Organizations. This is most commonly used at sites where multiple MRN issuers are present, but MPI is not implemented. IntelliSpace PACS uses the following matching criteria, also known as a **Weighted Match**, to associate a new patient with an existing one:

- 50 points are given for an exact match on PatientId (This is mainly there to handle auto-create organizations with the same issuer as a RIS organization).
- 25 points are given for the following attributes: mrnNumeric, patient last name, patient first name, middle name, patient birthdate, patient ssn.
- If the patient birthdate > 150 years, no points are given for the patient birthdate.
- If the ssn is empty or is equal to 000-00-0000, 111-11-1111,..., or 123-45-6789, no points are given for the ssn.
- If there are more than two matches in any organization, no matches are placed on the **Merge/Link Candidates** list for any organization. (This is to handle very common names like Smith or Gomez.)
- If the sex of the matching patient is different from the candidate patient, 50 points are subtracted.

Sum of 75 points or greater is required to create Merge Candidates (merge candidate applies if the patients are in the same organization). Sum of 100 points or greater is required to create Link Candidates list (a link candidate applies if the patients are in the different organization). If there is a total of 125 points and the Auto-Link setting is set to "True" in PACS Administration, then the record is auto-linked.

Multiple MRN/ACC Issuer with MPI

IntelliSpace PACS supports the use of a Master Patient Index (MPI) when it is consistently provided in the HL7 messages from all issuers. When MPI is implemented, IntelliSpace PACS does not perform any validation on patient demographic information; it relies on the authoritative sending systems to send correct demographics.

IntelliSpace PACS stores a patient's MPI as well as the specific MRNs associated with the appropriate Organizations. MPI to MPI merges are supported.

IntelliSpace PACS can read an MPI value from any field in an HL7 message—the field will be determined at the time of implementation, and may be a different field for each issuer as necessary.

Using the Merge/Link Candidates List to Merge or Link Patients

You can use the **Merge/Link Candidate(s)** list (found in the Folder List) to view and manage a list of potential duplicate records. Pairs of patient names are grouped together on the list, based on their records containing similar demographic information, including the patient address. The patient information is analyzed when the patient is created in the system, not when information for existing patients is updated.

The following information is displayed side-by-side for the two selected patients:

- Organization
- MRN
- First Name
- Middle Name
- Last Name
- Sex
- Date of Birth
- Social Security Number
- Address
- Mother's Maiden Name
- Phone Number (work)
- Phone Number (home)
- Email address
- Alias Last Name
- Alias First Name
- Alias Middle Name
- Title
- Suffix
- Optional: Prefix

The **Merge/Link Candidate(s)** list is only visible if you have the proper privileges to resolve duplicate patient records.

All merge operations will be audited and logged for:

- Completion of patient merge
- The user who performed the merge operation

- A time stamp showing when the merge was completed.
- An identifier (such as MRN) for the patient
- The MRN of the patient who was not kept.

NOTE

When IntelliSpace PACS receives a patient merge event through HL7, it automatically merges the two patients.



WARNING

Review the configuration before linking or merging patients to make sure the correct patients are linked or merged.

1. From the **Folder List**, click **Merge/Link Candidate(s)**. Pairs of possible duplicate records display, sorted by patient name, using the first patient name of each set. All fields on the **Merge/Link Candidate(s)** list are searchable, allowing you to narrow down the list as desired. Note the following:
 - The **Patient Name** and **MRN** fields support wildcard searches. For example, to find patient Doe, John you can search for the full name (Doe, John), full last name and partial first name (Doe, J) or partial last name (D). There is also a wildcard search option that allows you to search on a partial last name and “%” and partial or full first name (for example “D%, Joh”).
 - The **Organization**, **Type**, **Reason**, and **Sex** fields include a list of values you can select, but you can also enter the information manually. The information you enter manually will match a value in the list. Note that these fields do not support wildcard searches.
 - The **DOB** field includes a calendar control, but you can also enter the date manually. You can enter a date range (Start Date and End Date) to find all records with a patient Date of birth in that range. The date format matches the regional settings on your system (for example, in the U.S. the format is mm/dd/yyyy).
2. Right-click on a duplicate patient pair to display a menu with the actions you can take.
 - To merge duplicate patient records in the same organization, select **Merge Records**. The **Merge Patients** dialog box displays and allows you to complete the merge.
 - To link duplicate patient records in different organizations, select **Link Records**. The **Link Patients** dialog box displays and allows to complete the link.
 - To leave the original patient records unchanged, select **Ignore Patients**. A confirmation message displays. Click **Yes** to remove the selected merge pair from the **Merge/Link Candidate(s)** list and leave the original patient records unchanged.

**WARNING**

An incomplete merge may produce insufficient data or images that can result in delayed patient treatment or misdiagnosis. A warning message at the time of a patient merge error will display, indicating that the merge is incomplete and giving the demographics of the two patients being merged. The user is given the option to perform the merge again. The unsuccessful merge will be indicated as “Incomplete” in the audit trail.

Merging Patient Records from the Same Organization

With the proper privileges, you can merge two patient records with different identifiers from the same organization into one surviving patient identifier. The surviving identifier is associated with all records originally belonging to the two patient identifiers.

There are two methods for generating merge candidates:

- Weighted Match (default option)
- Exact Match

In a Weighted Match configuration, a merge candidate pair will appear on the Candidates list based on a Point system (see [“Resolving Merged or Linked Patient Records” on page 101](#)).

In the Exact Match configuration, a merge candidate pair will appear based on very specific matching criteria. This is to support the 3.X legacy merge candidate functionality.

- If Auto-Link is enabled, all the fields – Last Name, First Name, Middle Name, Sex and Date of Birth – match exactly to confirm identity.
- If Auto-link is disabled, and Merge/Link Candidates is enabled, the candidate is considered a match and added to the list if
 - Last Name, First Name, and Date of Birth match exactly.
 - Middle Name matches exactly or is blank for any of the compared patients.
 - Sex matches exactly or is "Unknown" for any of the compared patients.

If the patients match, they are put on the **Merge/Link Candidates** list. The System Administrator can then merge (if they are in the same organization), link (if they are in different organizations), or ignore the patient pair. See ‘Resolving Merged or Linked Patient Records’ (see page 128).

Note that you cannot update certain fields (such as nationality, race, religion, and so on) when merging. You can update these fields manually by editing the patient whose MRN is selected.

**WARNING**

- The Merge option has been identified as a hazard area in IntelliSpace PACS that could result in an incorrect or delayed diagnosis or delayed treatment.
- Philips strongly recommends that you visually verify the patient records you want to merge before merging.
- There is no undo function for the patient merge.

Merging Linked Patients from Different Organizations

Two patients within a single organization can be merged in IntelliSpace PACS without having to first manually unlink them. The **Merge Patients** dialog box shows the currently selected merge patients' record as well as the organizations to which those patients are linked.

A patient link indicates that patient records in multiple organizations represent a single individual. These patient links may occur automatically as a result of an algorithm, be manually created, or as the result of there being an MPI. When a merge is performed, IntelliSpace PACS can be configured to automatically update the demographic information for any patient records linked across organizations.

The following conditions must be met for this merge linked patients across organization:

- There must be at least two organizations.
- One merge candidate must be linked to a patient in the second organization.

If any linked organization has been configured to accept demographic updates for linked patients (in the IntelliSpace PACS AdminTool), a warning message is displayed before the **Merge Patients** dialog box opens. Additionally, a red exclamation mark (!) is displayed in the **Merge Patients** dialog box for these organizations and the MRN is displayed in red text, indicating that this demographic information will not be transferred after the merge.

1. Select the patients to merge and click **Merge Patients**.
2. Select the demographic details of the selected merge candidate from the current Organization.

Currently
selected
patient
record to
merge

Linked
patient

Merge Patients

Carefully review the information for the two patient records you intend to merge and select the fields you wish to keep.

Patient Record 1		Patient Record 2
Select All: ☐		☐
MRN(DEFAULT): ☐ 123A		☐ 123
Last Name: ☐ John1		☐ Doe
First Name: ☐ John1		☐ John
Middle Name: ☐		☐
Sex: ☐ F		☐ M
Date of Birth: ☐ 1/1/1945		☐ 1/1/1973
Social Security Number: ☐ 123-123-1234		☐ 123-123-1234
Mother's Maiden Name: ☐		☐
Phone Number (Work): ☐ 123-123-1234		☐ 123-123-1234
Phone Number (Home): ☐ 123-123-1234		☐ 123-123-1234
Email Address: ☐ abc@efgh.ijkl		☐ abc@abc.test
Title: ☐		☐
Suffix: ☐		☐
Alias First Name: ☐		☐
Alias Middle Name: ☐		☐
Alias Last Name: ☐		☐
Address: ☐ 11122 Street one Last floor Lost City, California 12345 UNITED STATES		☐ 123 test lane apt 100 Foster City, California 94404 UNITED STATES

Linked Organization	Linked Patient Record 1	Linked Patient Record 2
▶ MRN(TEST): ☐ test1		☐ TEST123
▶ ! MRN(TEST1): ☐ TEST1ABC		☐ TEST1MRN

Note: All other information from the patient record, whose patient identifier has been selected, will be retained
! Organization is not configured to accept demographics update

Merge Patients Cancel

The linked patient's MRN from the Organization is displayed in the bottom of the **Merge Patients** dialog box.

3. If desired, select the MRN of the patient in the Linked Organization section to view the patient's demographic information (First Name, Middle Name, Last Name, Sex, Date of Birth, and Address).
4. Click **Merge Patients**. All linked patients with this demographic data are updated if IntelliSpace PACS has been configured to allow this.

Using the Merge/Link Candidate List to Merge Patients

NOTE

Merge candidates appear within the same Organization, while Link candidates appear in different Organizations.

1. In the Folder List, click **Merge/Link Candidate**.
2. Enter the search criteria for **Organization** and **Type** (**Merge** or **Link**). If you do not select an **Organization** or **Type**, all merge/link candidates for all organizations are retrieved.

3. Press **Enter** or click **Search**. A list of pairs of potential patients to merge or link displays. If no patients match, IntelliSpace PACS displays a message in the Control Strip.
4. Right-click on a set of patients' names and from the menu, select **Merge Patients** for merge candidates, or **Link Patients** for link candidates. (Review the **Type** column to determine whether you can merge or link.) See [“Linking Patient Records from Different Organizations” on page 109](#).
5. The **Merge Patients** dialog box displays, displaying information from both patient records side-by-side. The information for the first patient you selected is displayed in the left column, and all fields are selected for this patient.
6. Select the fields you wish to keep for the new record. Fields you do not select are not kept in the merged record. The fields you can select are: **Last Name**, **Middle Name**, **First Name**, **Sex**, **Date of Birth**, **Social Security Number**, and **Address**. When you select a field, the corresponding field in the other record is displayed with a red line through it, indicating that you do not want to keep this information.
7. Click **Merge Patients**. A confirmation message displays. Click **OK** to merge records and keep the selected patient data. The list of patient names is refreshed to display the updated merged patient information. The exams from both patients are displayed under the merged patient.

Using Patient Lookup to Find Patients to Merge

1. In the **Patient Lookup**, enter the desired search criteria to find the patients you want to merge.
2. **Ctrl-click** to select the two patients you want to merge.
3. When the names are selected, right-click and from the menu choose **Merge Patient**. The **Merge Patients** dialog box displays a list of the patient information fields, none of which are selected. In addition, the **Merge Patients** button is disabled (can't be selected or clicked). Note the following:
 - If any of the fields of the first patient record does not have a value, but the same field for the second patient has a value, then that value is selected automatically.
 - When a field does not have a value in either patient record, then the first patient's record is selected automatically.
 - When both fields are identical, the first patient record is selected automatically.
 - Each patient column has its own Select All button, which will select all of the fields of the given patient.
 - Selecting any radio button strikes out the value associated with the same field for the adjacent patient.
4. Review the information and select the button(s) next to the information you want to keep for the merged patient.
5. Click **Merge Patients**. A confirmation message displays.
6. Click **Yes** to complete the merge. The list of patient names is refreshed in the **Patient Lookup**.

Merge Patient Examples

The following examples illustrate two reasons why you would need to merge patient records.

Example 1:

A single person has been entered into a HIS/RIS with two different Medical Record Numbers (MRNs), as follows:

- “John Smith, MRN: 123456, M, DOB: 12/31/00...” and
- “John Smith, MRN: 111111, M, DOB: 12/31/00....”

These records belong to the same individual, but because their MRNs are different, they are seen by the system as two unique individuals.

In theory, this scenario can pose a risk to patient care. In this example, the records for two John Smith's, both with identical demographic information, should be merged into one record. Be aware that there are significant implications to merging two patient records. If a pair is mistakenly merged, patient care could be delayed or impeded. Also, you cannot undo a patient merge.

Example 2:

An unconscious man is brought into the Emergency Room. He is given a fictitious name and MRN and other information when the technologist enters him into the HIS/RIS and takes images. Later, when the patient regains consciousness, the technologist is informed of his true name, date of birth, and so on, and enters this into the HIS/RIS.

Now, two patient records exist for the same patient. However, IntelliSpace PACS will not recognize these two records as merge candidates. In order to merge these patient records you must use the **Merge Patient** feature and perform a manual merge.

Linking Patient Records from Different Organizations

Many healthcare systems provide MPI or other mechanisms for attempting to maintain a single patient record despite disparate patient management systems. Aside from providing a single patient history, value is also derived from maintaining a single unified set of patient demographics.

There are two variations for managing the demographics of linked patients (whether linked via MPI, PACS-driven linking, or manual linking):

- **Comprehensive Patient Record:** IntelliSpace PACS applies any demographic changes (whether received via HL7 or manually performed in the UI) to all linked patient records, thus maintaining the unified set.
- **Single Patient Record:** IntelliSpace PACS updates the demographics for a single patient record in a linked group of records (whether received via HL7 or manually performed in the UI). This allows a group of linked patient records to have varied demographics.

IntelliSpace PACS provides the option to enable or disable propagation of demographic updates to linked patients when changes to patient demographics (name, sex, DOB, etc.), exclusive of MRN are generated by one of the following:

- HL7 messaging
- the user interface (UI)

Linked patients are defined as patients who are linked because MPI is in use and the patients share an MPI; or the patients are auto-linked based on defined matching criteria; or the patients are manually linked using the UI (**Merge/Link Candidates** list).

A link is a useful way to see patient studies across multiple organizations and reports in the same exam timeline. You can link:

- Patient records in different organizations that represent the same patient.
- Patients who already have existing links to other patients. In this case, the link connects all linked patients to the same patient record. There may be differences between the patients to be linked (for example, if there has been a name change), but much of the demographic information will usually match.

The following information is displayed side-by-side for the two selected patients:

- Organization
- MRN
- First Name
- Middle Name
- Last Name
- Sex
- Date of Birth
- Social Security Number
- Address
- Mother's Maiden Name
- Phone Number (work)
- Phone Number (home)
- Email address
- Alias Last Name
- Alias First Name
- Alias Middle Name
- Title
- Suffix
- Optional: Prefix

If you have the proper privileges, you can update MRNs for the linked patients and remove patient records from links in the **Edit Patient** dialog box. See [“Editing Patient Records” on page 98](#). Note the following about removing links:

- After you remove a link, the previously linked patients are not displayed on the **Merge/Link Candidate** list.
 - If the MRN is modified, IntelliSpace PACS verifies that the MRN is unique in the organization.
1. Use the **Patient Lookup** to find the patients whose records you want to link. You can link two or more patients from different organizations.
 2. **Ctrl-click** to select the two patients you want to link.
 3. When the names are selected, right-click and from the menu choose **Link Patients**. The **Linked Patients** dialog box displays a list of all patient records linked to the current patient record, including the organization, patient MRN, and patient name.
 4. Verify that you are linking the correct patients. Review the **Organization, MRN, Last Name, First Name, Middle Name, Sex, Date of Birth, Social Security Number, and Address**.
 5. Click **Link Patients**.
 - The linked patients list is refreshed and a single patient record is displayed.
 - The single patient record displays the **Patient Name, MRN, DOB and Organization (ORG)**. Expand the linked patient record to see all the exams of the current organization and the linked patient's exams from other organizations along with their MRN.

NOTE

You can right-click on one or more linked patients and select Unlink Patient(s) to remove patients from a link.

NOTE

If the GID (Geographical Identification) feature is enabled on the IntelliSpace PACS server, the SSN field is replaced with the GID field. This field will not be editable in the Edit Patient dialog.

Creating Exams

Some hospitals schedule in “real time,” meaning that orders are created when the patient arrives in Radiology. As a result, if the HL7 interface goes down, IntelliSpace PACS does not have the orders to match the studies against. You can use the **Create Exam** dialog box to manually create exams when the HL7 system is down. You can also edit exams. See [“Editing Exams” on page 121](#).

NOTE

Refer to your local policy on creating new exams in IntelliSpace PACS before using the Create Exam feature. If you have HIS/RIS integration, exams created in IntelliSpace PACS will not be synchronized in your HIS/RIS.

You might want to use the **Create Exam** feature when a patient brings in old prior films that do not have matching orders in your HIS/RIS. You can create an exam so that when those films are digitized and sent to IntelliSpace PACS, they can become part of the patient record.

1. Do one of the following:
 - Use the **Exam Lookup** to search for and display a list of exams.
 - Use the **Patient Lookup** to search for and display a list of patients. Display the exams for a patient.
 - Select a filter that displays exams.
2. Right-click over a patient or an exam in a list, and from the menu choose **Create Exam**. The **Create Exam** dialog box displays with the **Exam Info** pane displayed.
3. Fill in the following fields as desired in the **Exam Info** pane.
 - The **Organization** will be auto-selected.
 - Enter the **Accession #**. (required), maximum length is 20 characters. Click **Generate** to generate the Accession #. The accession number is generated based on the Prefix/Current Value settings configured for the noted organization in the IntelliSpace PACS AdminTool.
 - From the **Exam Priority** list, select the priority of the exam.
 - The status of the exam is a non-editable field. For an auto-create organization, it will utilize a status of Scheduled, In-Progress, Complete or Final based on the configuration in the IntelliSpace PACS AdminTool. For a HL7 Integrated Organization, the status will be Scheduled by default.
 - From the **Exam Status** list, select the status of the exam.
 - Enter the **Scheduled Date/Time**. Click the arrow next to the date to select a date from a calendar control. Enter the time or click the arrows to set the time. You can review the **Performed Date/Time**, but cannot change it.
 - Enter the **Exam Code**, or click the button to search for and select an exam code from the **Exam Code Dictionary** (required). The Modality, Description and Body Part are auto-populated after selecting the Exam code.
 - Enter the **Exam Code Modifier**, or click the button to search for and select one from the **Exam Code Modifier Dictionary**.
 - Enter the **Performing Resource** for the exam, or click the button to search for and select one from the **Performing Resource Dictionary**.
 - Enter the **Ordering Location** for the exam, or click the button to search for and select one from the **Ordering Location Dictionary**.
4. Click **Providers** to enter provider information. See [“Entering Provider Information When Creating Exams” on page 113](#).
5. Click **Exam History** to enter exam history information. See [“Entering Exam History Information When Creating Exams” on page 113](#).
6. Click **Save**.

Entering Provider Information When Creating Exams

1. Use the **Patient Lookup** to search for and display a list of patients.
2. Right-click over a patient or an exam in a list, and from the menu choose **Create Exam**. The **Create Exam** dialog box displays with the **Exam Info** pane displayed.
3. Fill in the fields in the **Exam Info** pane and click **Providers** to display the next pane.
4. Enter the name of the **Referring Physician**, or click the button to search for and select a referring provider from the **Referring Physician Dictionary**. When you select a provider, the provider's ID, address, and phone information displays on the right side of the pane.
5. Click **Exam History** to enter exam history information. See [“Entering Exam History Information When Creating Exams” on page 113](#).
6. Click **Save**.

Entering Exam History Information When Creating Exams

1. Do one of the following:
 - Use the **Exam Lookup** to search for and display a list of exams.
 - Use the **Patient Lookup** to search for and display a list of patients. Display the exams for a patient.
 - Select a filter that displays exams.
2. Right-click over a patient or an exam in a list, and from the menu choose **Create Exam**. The **Create Exam** dialog box displays with the **Exam Info** pane displayed.
3. Fill in the fields in the **Exam Info** and **Providers** panes and click **Exam History** to display the next pane.
4. Enter information on the **Signs and Symptoms** for the exam.
5. Enter information about the **History** for the exam.
6. Enter additional **Comments** about the exam.
7. Click **Save**.

8 Finding and Managing Exam Information

Exam Lookup Overview

You can use the **Exam Lookup** to quickly find exams based on a combination of search criteria. You can also use the **Patient Lookup** to display a list of exams (by expanding the list of exams under a patient name), but the **Exam Lookup** is a more efficient way to find exams. See [“Patient Lookup Overview” on page 81](#).

Note that the list of exams is not automatically updated when new exams come in.

Select search criteria and click Search

Search for exams with images

	Patient Name	N/A	Exam User Name	Accession #	Modality	Exam Description	Exam Status
	ACFTI, JUSTIN, POW...	MURPHY, JA...	5/5/2006 10:17:46	345545	CR	OPTICS	0
	ACFTI, JUSTIN, POW...	MURPHY, JA...	5/5/2006 10:18:30	345545345345	CR	HIP UNILATERAL	X
	ACFTI, JUSTIN, POW...	MURPHY, JA...	5/5/2006 10:20:10	70776752777777	CR	ATROPHIC COMP	X
	ACFTI, JUSTIN, POW...	MURPHY, JA...	5/5/2006 10:21:50	4545345345345	CR	OPTICS	X
	TRACER, Craig	POWELL, CRAIG	5/5/2006 10:24:00	44FE2020009	CR	OPTICS	0
	TRACER, Craig	POWELL, CRAIG	5/5/2006 10:24:10	44FE2020017	CR	No Description	-
	TRACER, Craig	POWELL, CRAIG	5/5/2006 10:24:10	44FE2020000	SC	No Description	-

Exam information icons

Fig. 22: Exam Lookup

Icons display to the left of exams indicate the following:

Icon	Description
	STAT exam
	Locked exam
	Linked exam
	Exam has been marked read
	Diagnostic report available
	Exam has exam notes
	Exam has images
	Cache Status

You can search for exams using any combination of the following and other criteria. The search criteria in bold below must be displayed at all times:

- Stat
- Exam Loaded

- Exam Linked
- Mark Read
- Report Available
- Has Notes
- Has Images
- Cache Status
- Organization
- Performing Resource
- Subspecialty
- Patient Name
- Patient Sex
- Date of Birth
- **MRN**
- **Exam Date/Time**
- **Scheduled Date/Time**
- **Accession #**
- **Modality**
- Exam Description
- Exam Code
- Exam Status
- Body Part
- Referring Physician
- Referring Physician ID
- Laterality
- Ordering Location
- # Images
- Locked By
- Time Locked
- Priority
- Patient Class

NOTE

Images field shows the sum of displayable images and non-displayable (for example, GSPS, Structured Report) objects.

When a list of exams is displayed, you can do the following:

- Double-click an exam to open it. (To open an exam without locking it, press and hold the **Alt** key while double-clicking on the exam.)
- Right-click to display a menu with actions.
- Rearrange and select certain search criteria columns to hide or display.
- **Shift-click** to select contiguous exams or **Ctrl-click** to select multiple, non-contiguous exams.
- Resize columns by clicking the right edge of the column and dragging it to the left or right.
- Sort the list by clicking on each column header.

NOTE

The cache status icon will be available only if the **Enable caching of exams with priors** option is enabled in the **System Preference > General Preference** and if the Cache with priors is selected in the context menu of the exam. See [“Setting General Preferences” on page 446](#) for more details.

Searching for Exams

1. Select **Exam Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. Enter the desired search criteria. If you search by Accession # or MRN, the **Exam Date/Time** field is ignored. Note that you can't use **Patient Sex** as a search criteria.)
3. If you only want to find exams that have images, select the **Exams with images only** check box.
4. Press **Enter** or click **Search**. A list of exams that match your search criteria is displayed. STAT exams are always displayed at the top of the list.

NOTE

When the values in the organization field is selected as part of the search criteria, it remains persistent.

Searching for Exams by Patient Name

You can use patient names to search for exams by entering their last and first name or by using a wildcard search. For example, to find patient Doe, John you can search for the full name (Doe, John), full last name and partial first name (Doe, J) or partial last name (D). There is also a wildcard search option that allows you to search on a partial last name and “%” and partial or full first name (for example D%, Jo).

NOTE

You can also search for exams by multiple referring physician names. Separate last names with semi-colons and first and last names with commas (for example, "Smith;Jones" or "Smith,Robert;Jones,David"). You can also include the wildcard character (%) to search for partial last or first names (for example, "Smi%" or "Smi%,Rob%").

1. If it is not already displayed, select **Exam Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. Enter all or part of the patient's last or first name.
3. Click **Search** or press Enter. Exams for patients in the specified time or date range are displayed.

Searching for Exams by Date

You can select a supplied date/time value to search for exams, or specify a custom date range using a calendar control.

1. Select **Exam Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. In the **Exam Date/Time** column or **Scheduled Date/Time** column, either select a time/date range from the list or select **All** to display all the exams (latest 200 exams will be displayed).
3. Click **Search** or press **Enter**.
Exams matching the search criteria are displayed.

Searching for Exams by a Custom Date Range**NOTE**

The maximum date range you can specify in a Custom Date Range search is 100 years. If the search range is greater than 100 years (for example, 6/3/1911 - 6/3/2011), then an error message displays: "Custom search date range shall not exceed 100 years".

1. Select **Exam Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. In the **Date/Time** column, select **Custom**. A **Start Date** and **End Date** window displays a range of Today's date for both start date and end date. If a **Custom** date is set to more than 7 days, the filter is not auto-refreshed every one minute.
3. Enter the desired start and end dates, or click the arrow for either date to enter the date using the calendar control. (Note that you cannot delete or modify the **Date/Time** field; you can only select a date from the calendar control.)

4. Click **OK** when you have entered the desired dates.
5. Click **Search**. Exams for patients in the specified date range are displayed.

Showing or Hiding Exam Lookup Columns

You can show or hide any exam search criteria columns except the ones that are grayed out in the list.

1. Right-click in the column area.
2. Select the columns you want to show or hide. Shown columns are checked; hidden columns are unchecked.
3. Repeat steps 1 and 2 as required.

Rearranging Exam Lookup Columns

You can click and drag **Exam Lookup** columns to rearrange their order. This allows you to customize the order in which exam information is displayed.

- Press and drag a column to the position you want, and release the mouse button. Your changes are saved for your next session after you log out.

Sorting Results

After an exam lookup, the list is automatically sorted by exam date/time in ascending order.

- Click the blue column heading that you want to sort by. An arrow appears in the column heading to display whether the order is ascending (A-Z or 1-9) or descending order (Z-A or 9-1). To reverse the order, click the same column heading again.

Exam Management Overview

In IntelliSpace PACS, a single requested procedure is an exam. Each exam has a unique identifier – called an Accession # (maximum length of 20 characters) – in an organization. You can do the following for exams displayed from an **Exam Lookup** or in a filter. You access these features by right-clicking over a patient name in the **Exam Lookup** and selecting an option from the menu. A separate set of actions is available when you right-click on a patient instead of an exam. See [“Patient Management Overview” on page 96](#) for more information.

- **View Exam Notes:** See [“Viewing Exam Notes” on page 140](#)
- **Export via DICOM:** See [“iExport for DICOM Export” on page 348](#)
- **Cache Exam:** See [“Local Exam Caching” on page 130](#)
- **Create Exam:** See [“Creating Exams” on page 111](#)
- **Edit Exam:** See [“Editing Exams” on page 121](#)

- **Begin:** See [“Beginning Exams” on page 124](#)
- **Complete Exam:** See [“Completing Exams” on page 125](#)
- **Cancel Exam:** See [“Canceling Exams” on page 125](#)
- **Delete Exam:** See [“Deleting Exams” on page 126](#)
- **Linking Exams:** See [“Linking Exams” on page 127](#)
- **Unlinking Exams:** See [“Unlinking Exams” on page 128](#)
- **Detach Study:** See [“Detaching Studies” on page 129](#)

You must use the **Exception Handler** to resolve exceptions for exams if one of the following occurs. See [“Using the Exceptions Handler” on page 175](#).

- An exam has been created automatically by auto-create (only occurs in auto-create organizations)
- An exam has been received from a 3rd-party archive (not by an auto-create port)
- The patient has provided images on a CD and you use a third-party tool (such as eFilm) to import the DICOM images

Understanding Exam Statuses

It is important to understand the different statuses an exam can have in IntelliSpace PACS to properly use the exam management features. The status of an exam changes as it transitions through IntelliSpace PACS and other systems. The following table lists the available exam statuses and indicates what the allowable exam statuses are within IntelliSpace PACS. Some exam statuses (displayed as blank in the table below) can only be changed by messages received through the HIS/RIS interface.

Exam Status	Allowed From
S (Scheduled)	S
I (In Progress)	S
T (Taken)	
C (Completed)	S, I, T
D (Dictated and stored)	I, T, C
P (Preliminary)	
F (Final)	
A (Addended)	
R (Revised)	
X (Cancelled)	
N (Non-Reportable)	N, X

Editing Exams

You can use the **Edit Exam** dialog box to make corrections to exam information and to view a list of all exam records linked to the current exam record. See [“Viewing Linked Records When Editing Exams” on page 124](#). For information on creating exams, see [“Creating Exams” on page 111](#).

NOTE

Refer to your local policy on creating new exams in IntelliSpace PACS before using the Edit Exam feature. If you have HIS/RIS integration, exams edited in IntelliSpace PACS will not be synchronized in your HIS/RIS.

There are many reasons you might need to edit an exam, including:

- Adding a patient history or reason for exam in one of the **Comments** fields.
- Removing older studies received from a 3rd-party archive.
- Updating the **Exam Code** or **Provider** fields if they are blank or incorrect.
- Assigning a new Accession # to an exam if a Technologist accidentally enters an Accession # from a different patient at the scanner. If the Accession # is already in use, the study can be detached.
- Receiving an order with a new exam code for which there is no associated body part. When the dictionary is updated so that the exam code has an associated body part, the Technologist can edit the exam to update the **Body Part** field.
- Adding data not provided by the HIS/RIS.

When you edit an exam, the **Edit Exam** dialog box header displays information about the patient whom the exam is for. The patient's identifier, last, middle, and first names, sex, date of birth, and Social Security number are displayed, in addition to the exam Accession #.

NOTE

The following fields in the Edit Exam dialog are not editable: Scheduled Date/Time;, Description, Modality, and Body Part. The Description, Modality, and Body Part fields auto-populate when an Exam Code is selected.

1. Do one of the following:
 - Use the **Exam Lookup** to search for and display a list of exams.
 - Use the **Patient Lookup** to search for and display a list of patients. Display the exams for a patient.
 - Select a filter that displays exams.

- Right-click an exam in a worklist, and from the menu choose **Edit Exam**. The **Edit Exam** dialog box displays with the **Info** pane displayed.

Edit Exam

Accession #: 4-1
ACPT2-KDX, MR-ILE-MONO2, 4-1, Female, 8/12/1958, N/A

Info (selected)

Providers

History

Links

Organization: Exam Priority:

Accession #: Exam Status:

Scheduled Date/Time:

Performed Date/Time:

Exam Code: ... Modality:

Description: Body Part:

Exam Code Modifier: ...

Performing Resource: ...

Ordering Location: ...

- Modify the following fields as desired in the **Info** pane.
 - Accession #:** Click **Generate** to generate the Accession #. The accession number is generated based on the Prefix/Current Value settings configured for the noted organization in the IntelliSpace PACS AdminTool. The maximum length is 20 characters.
 - Exam Priority:** Select **Low**, **Medium**, **High**, **Routine**, or **STAT** for the exam priority. Note that if the filtering is greater than or equal to three days, exams with a priority of **STAT** are displayed at the top of the worklist.
 - Performed Date/Time:** Click the arrow next to the date to select a date from a calendar control. Enter the time or click the arrows to set the time. You can review the **Scheduled Date/Time**, but cannot change it.
 - Exam Code:** Click the button to search for and select an exam code from the **Exam Code Dictionary** (required). Entering an Exam Code auto-populates the Description, Modality, and Body Part fields.
 - Exam Code Modifier:** Click the button to search for and select one from the **Exam Code Modifier Dictionary**.
 - Performing Resource:** Click the button to search for and select one from the **Performing Resource Dictionary**.

- **Ordering Location:** Click the button to search for and select one from the **Ordering Location Dictionary**.
4. If desired, click **Providers** in the left pane to edit provider information. See [“Changing Provider Information When Editing Exams” on page 123](#).
 5. If desired, click **History** in the left pane to edit exam history information. See [“Changing Exam History Information When Editing Exams” on page 124](#).
 6. If there are linked records associated with this exam, click **Links**.
 7. Click **Save** when you are done.

NOTE

You can type data directly in the Exam Code Modifier, Performing Resource, and Ordering Location fields, but if the data is incorrect or non-existent, the dictionary associated with that field will open and display the message “No Matching Records. Please refine your Query parameters.” Either enter the correct parameters for the query and click Search, or click Cancel to close the Dictionary Query dialog, and then click the button next to the appropriate field to select from the corresponding dictionary.

Changing Provider Information When Editing Exams

1. Do one of the following:
 - Use the **Exam Lookup** to search for and display a list of exams.
 - Use the **Patient Lookup** to search for and display a list of patients. Display the exams for a patient.
 - Select a filter that displays exams.
2. Right-click over an exam in a list, and from the menu choose **Edit Exam**. The **Edit Exam**, dialog box displays with the **Info** pane displayed. Fill in the fields in the **Info** pane and click **Providers** to display the next pane.
3. Enter the name of the **Referring Physician** or click the button to search for and select a referring provider from the **Referring Physician Dictionary**. If you enter a partial name, the **Providers Dictionary** dialog box displays with the matching physicians, so that you can select the correct one. If searching, do the following:
 - To search for all referring providers, click **Search**.
 - To filter the provider search, specify the search criteria and then click **Search**.
 - When the desired referring physician’s name is displayed select it and click **OK**. The dictionary closes and the selected **Referring Provider** name displays in the **Edit Exam** dialog box.
4. If desired, click **History** to edit exam history information. See [“Changing Exam History Information When Editing Exams” on page 124](#).
5. Click **Save**.

Changing Exam History Information When Editing Exams

1. Do one of the following:
 - Use the **Exam Lookup** to search for and display a list of exams.
 - Use the **Patient Lookup** to search for and display a list of patients. Display the exams for a patient.
 - Select a filter that displays exams.
2. Right-click over an exam in a list, and from the menu choose **Edit Exam**. The **Edit Exam** dialog box displays with the **Info** pane displayed. Fill in the fields in the **Info** and **Providers** panes and click **History** to display the next pane.
3. Add or edit the following information as desired:
 - Information on the **Signs and Symptoms** for the exam.
 - Information about the **History** for the exam.
 - Additional **Comments** about the exam.
4. Click **Save**.

Viewing Linked Records When Editing Exams

1. Do one of the following:
 - Use the **Exam Lookup** to search for and display a list of exams.
 - Use the **Patient Lookup** to search for and display a list of patients. Display the exams for a patient.
 - Select a filter that displays exams.
2. Right-click over an exam in a list, and from the menu choose **Edit Exam**. The **Edit Exam**, dialog box displays with the **Info** pane displayed.
3. Click **Links** and review the information. If desired, you can remove the link by clicking **Remove from Link**.
4. Click **Save**.

Beginning Exams

NOTE

These actions—Beginning, Completing, Canceling, and Deleting exams—performed in IntelliSpace PACS do not update the HIS/RIS so they may cause IntelliSpace PACS to be out of sync with the HIS/RIS.

When you begin an exam, the status changes from **Scheduled** to **In Progress** and that patient's demographic information is made available for download to the scanner. See [“Understanding Exam Statuses” on page 120](#) for more information on exam statuses.

Before beginning an exam, you should first verify that the **Performing Resource** in the worklist is correct and that an interpreting provider has entered a protocol for the exam. Technologists who share worklists can differentiate between exams with a status of **Scheduled** and a status of **In Progress**. This allows Technologists to update Radiologists on an exam status before the images are sent to the PACS.

- Right-click on a scheduled exam in a worklist and select **Begin Exam** from the menu.

Completing Exams

NOTE

These actions—Beginning, Completing, Canceling, and Deleting exams—performed in IntelliSpace PACS do not update the HIS/RIS so they may cause IntelliSpace PACS to be out of sync with the HIS/RIS.

IntelliSpace PACS is usually configured so that the exam status is set to **Completed** when the exam is created using the auto-create port. See [“Understanding Exam Statuses” on page 120](#) for more information on exam statuses.

After a Technologist performs a procedure, they often want to inform other IntelliSpace PACS users that the exam has been performed and is ready for review. They do this by setting the exam status to **Completed**. Many Radiologists create a worklist filter so that only **Completed** orders are displayed.

1. Right-click on an exam with a status of **In Progress** in a worklist.
2. From the menu, select **Complete Exam**.
3. The status of the exam changes from **In Progress** to **Complete** and the worklist is refreshed to show the updated exam status.

Canceling Exams

NOTE

These actions—Beginning, Completing, Canceling, and Deleting exams—performed in IntelliSpace PACS do not update the HIS/RIS so they may cause IntelliSpace PACS to be out of sync with the HIS/RIS.

You can manually cancel exams that have a status of **Scheduled**. The Accession numbers of canceled exams are not re-released, and you cannot undo canceling an exam. Canceled exams are still visible in the worklist. Images received for canceled exams become an exception study. See [“Understanding Exam Statuses” on page 120](#) for more information on exam statuses.

1. Right-click on an exam with a status of **Scheduled** in a worklist.
2. From the menu, select **Cancel Exam**. The **Cancel Exam** dialog box displays.
3. Select the **Predefined Reason** you want to cancel the exam or enter a reason.
4. Click **OK**.

Deleting Exams



WARNING

The incorrect use of the Delete Exam feature poses serious threats to patient diagnosis and patient care. Therefore, only qualified and thoroughly trained professionals should be given access to this feature. You should take the following precautions when deleting patient exams:

- Regularly backup your system—only data that has been saved to a backup medium can be restored to your database; if you need to restore a patient record that was deleted in error, you will need a backup medium from which to retrieve the erroneously deleted record.
- Visually verify the patient exam before deleting.

NOTE

These actions—Beginning, Completing, Canceling, and Deleting exams—performed in IntelliSpace PACS do not update the HIS/RIS so they may cause IntelliSpace PACS to be out of sync with the HIS/RIS.

A deleted exam is an exam that was scheduled (and possibly performed), but whose folder was deleted. Deleting an exam removes all associated information, including exam notes. Deleted exams are not displayed in the Exam timeline. Accession numbers you delete are released and available for re-use for other patient exams. You cannot undo a delete.

You should delete an exam only in the rare instance that the exam never should have been scheduled. For example, if two separate patients have the same name, and an exam is performed on the correct patient but recorded under the wrong name, you would need to delete the exam from IntelliSpace PACS and re-enter the information under the correct name. Other reasons you might want to delete an exam include:

- Test studies created at modalities need to be deleted.

- There are orders for procedures that IntelliSpace PACS does not receive images for, such as Radiology Non Image Chargeables, lab orders, and so on. Deleting these reduces clutter in the timeline and the rest of IntelliSpace PACS.
- The Technologist or someone else has made an error they want to undo, and do not want others to have access to the data.

Note that when deleting an exam with attached DICOM studies, the studies become exception studies.

While deleted exams are not visible in IntelliSpace PACS, they are not permanently deleted, meaning they are still in the database. IntelliSpace PACS audits the following information when an exam is deleted: IntelliSpace PACS user ID, deletion date, deletion time, accession#, MRN, and reason for deletion.

1. Right-click on an exam that does not have a status of **Scheduled** in a worklist.
2. From the menu, select **Delete Exam**. The **Delete Exam** dialog box displays. If you select a linked exam, a warning message displays indicating that the exam is linked, and that images originally received for this exam will no longer be available to the linked exams if the exam is deleted.
3. Select the **Predefined Reason** for deleting the exam or enter a reason.
4. Select the **Delete Studies** check box if you want to delete the images. If you do not select this option, the exam becomes an exception study.
5. Click **Delete**. The exam is deleted and the worklist is refreshed to show the updated patient information.

Linking Exams

You can link multiple exams with the same MRN in the same organization to a single image set. The related images are available from any of the individual linked exams. Linked exams can be for different modality types but must belong to the same patient.

When you link multiple exams, all exams point to the same DICOM study. Linking only applies to images; it does not influence how reports are stored with exams. Canceling one exam does not automatically cancel the other linked exams. For example, you might have four exams scheduled in the RIS: CT HEAD, CT CHEST, CT ABDOMEN, and CT PELVIS, all with different Accession numbers. The orders are scanned in one sequence and end up in a single DICOM study. You can link these exams so they all point to the same study.

The actions you can take when linking exams for the same patient at the same organization depend on the status of the exams you are linking. Note the following when linking exams:

- You cannot link exams with a status of **Canceled** or **Deleted Studies**.
- You cannot delete linked exams. You must first remove the exam link.
- When exams are linked, if only one exam has images associated with it, the status of all the exams is the same status as the exam with images attached, as long as that exam has status of In Progress (I) or Taken (T).
- If no exams have images attached to them, the exam status stays the same after linking.

- When IntelliSpace PACS receives images for a linked exam and has either the In Progress (I) or Taken (T) status, the status of the other linked exams is set to the same status when they are still in Scheduled.
- A warning displays if you try to link two exams where one exam has been marked as read or has a status of **Dictated**, **Preliminary**, or **Final Report Status**. See [“Understanding Exam Statuses” on page 120](#) for more information on exam statuses.
- You can unlink exams of any modality type.



WARNING

You cannot link exam notes to linked exams. For example, if you link CHEST-ABDOMEN-PELVIS exams and an exam note is attached to the CHEST exam, this exam note will not be displayed in the worklist and Canvas Page associated with the ABDOMEN and PELVIS exams. Also, the exam note might contain information on the linked exams that will not be visible to the reading physician or clinician.

1. From the list of exams, **Shift-click** or **Ctrl-click** to select the exams you want to link. You can link two or more exams.
2. Right-click and select **Link Exams** from the menu. The exams are linked and the **Link** icon is displayed.

Unlinking Exams

The effect of unlinking exams depends on whether or not images have arrived for the exam, as follows:

- When you unlink an exam before images have arrived, you undo the **Link Exam** function.
- When you unlink an exam from a group of exams after images have arrived, the selected exam is removed from the link, meaning that there are no longer images attached to the exam.

You can unlink one or multiple linked exams. Unlinking an exam does not change the exam status. You should not unlink exams after they are marked as read or if they have a report attached to them.

1. From the list of exams, right-click on the linked exam(s) you want to unlink.
2. Select **Unlink Exams** from the menu. The selected exams are unlinked and the **Link** icon is removed.

Viewing Locked Exams

When a Radiologist opens an exam to read, the exam becomes locked so that no other user can mark the exam as read. However, sometimes the Radiologist who has the exam open leaves the workstation without closing the exam, or their workstation crashes while the exam is locked. If this occurs, the System Administrator can unlock the exam so that another Radiologist (or the same Radiologist) can re-open the exam to read.

IntelliSpace PACS includes a worklist called **Locked Exams** which shows which exams are opened and locked, and by whom. Users with the proper privileges can unlock an exam from this worklist.



WARNING

Locks are granted on a per-user basis. This means that if multiple users log into IntelliSpace PACS using the same user ID, these users will be able to unlock and mark exams read locked by each other. To prevent this from occurring, make sure you confirm the patient identity and demographic information before beginning an exam.

1. From the **Folder List**, click **Locked Exams**. A list of the currently locked exams displays.
2. Enter the desired search criteria. Note that you can use the **Delete** key to clear the date field.
3. If you only want to find locked exams that have images, select the **Exams with images only** check box.
4. Press **Enter** or click **Refresh**. A list of exams that match your search criteria is displayed.

Unlocking Exams

NOTE

Only users with the proper permissions can unlock an exam.

1. From the list of locked exams, right-click on the exam you want to unlock.
2. Select **Unlock Exam** from the menu. A confirmation message displays.
3. Click **OK**. The exam is unlocked and removed from the list of locked exams.

Detaching Studies

Sometimes it is necessary to detach a study from a patient's exam record. For example, if images belonging to one patient's exam are accidentally assigned to another patient's exam, you must detach those images from that exam and reassign them to the correct patient's exam.

When you detach a study, you create an exception that you must resolve in the **Exceptions Handler**. When you attach a study, you resolve the exception and reassign the exam to the correct patient. You can also detach an individual study from an exam in the Canvas Page. See [“Detaching Individual Studies from Exams” on page 210](#). Note that you cannot detach linked exams.

NOTE

When a study is detached from an exam, IntelliSpace PACS may not be able to determine whether that study was used to set the exam fields. Therefore, when an exam gets created with no modality type and body part, the following might occur:

- Study1 arrives and is wrongly attached to the exam. The modality and body part of study1 is copied into the exam.
- When study2 arrives for the exam (correctly), its modality and body part are ignored (because the exam already has them set).
- When you detach study1 from the exam, IntelliSpace PACS shows the wrong modality and body part for the exam.

To correct this problem, manually edit the exam and select an exam code that is associated with the correct modality and body part.

1. In the **Patient Lookup**, **Exam Lookup**, or a worklist that shows exams, find the exam from which you want to detach a study.
2. Right-click on the exam and from the menu, select **Detach Study**. A confirmation message displays.
3. Click **OK**. The study is detached and becomes an exception. You now need to resolve the exception and reassign the exam to the correct patient.
4. In the **Exception Lookup** or a worklist that shows exceptions, find the exam you detached.
5. Right-click on the exam and from the menu, select **Resolve Exception**. The **Exceptions Handler** displays.
6. Use the **Exceptions Handler** to resolve the exception. See [“Using the Exceptions Handler” on page 175](#).

Local Exam Caching

The **Local Exam Cache** feature allows you to download patient exams to your local machines. This helps speed up access to patient exams when IntelliSpace PACS is being used remotely. The exam is downloaded to the location specified in the Local Exam Caching pane of the **Preferences** dialog box. See [“Setting Local Exam Caching Preferences” on page 522](#).

Cached exams are displayed in the **Local Exam Cache** folder. In addition, the individual listings display progress information as the exam is cached. The exam listings in the **Local Exam Cache** provide information about the patient and exam that has been cached. The columns include, from left to right:

- Close All (exam level listings)
- Status ()
- Subject (Patient name, Modality, Body Part)
- Received Date and Time
- Sender

You can sort the list by clicking these columns. The Status icon in the exam listing indicates whether the exam was successfully cached.

Certain patients, such as politicians, entertainers, and hospital employees, may be designated as VIPs (Very Important Persons) in IntelliSpace PACS. Accessing these patient records and performing all actions (such as opening exams, viewing images, exporting exams from the Media Viewer, and so on) are audited.

If you move several exams to the Local Exam Cache folder and some of the exams are for sensitive patients, the names and MRNs of the sensitive patients are listed before the exams are copied to the Local Exam Cache folder. You can choose to either copy all these exams or cancel the operation.

IntelliSpace PACS System Administrators should note the following:

- If there is not enough room for a given exam to be downloaded, the oldest downloaded exam is deleted. If there is still not enough disk space available to download the exam, the caching operation is suspended and the user is informed that there is insufficient disk space available.
- For security reasons, all images and metadata are cached in encrypted format.
- All images are stored on the local hard disk in the user's environment to avoid access privilege problems in Username\Local Settings\Application Data\iSite\4.4\Local Cache. Only users who logged into the workstation with the Local Exam Cache privilege can cache and view the cached exams, because it is saved under their username. If another user logs into the workstation after the previous user had cached exams to the hard disk, they will not have access to those previously cached exams.
- If new images have arrived at the IntelliSpace PACS Server after they were cached at a client, IntelliSpace PACS automatically loads these additional images into the viewer when the user requests them using the standard "just-in-time" iSyntax download mechanism. These additional images are not cached on the local hard disk.

The following actions are available when you right-click on an exam listing in the **Local Exam Cache** folder:

- **Show Report:** Displays the report associated with this exam. See ["Displaying and Printing the Current Report" on page 148](#).
- **Show Exam Memos:** Displays the exam notes associated with this exam. See ["Using Exam Notes" on page 136](#).

- **Export via DICOM:** Allows you to export the exam via DICOM. See [“iExport for DICOM Export” on page 348](#).
 - **Start Caching:** Allows you to start the caching of the selected exam(s) immediately.
 - **Cancel Caching:** Allows you to cancel the caching if the process has already started.
 - **Delete Cache Item:** Allows you to delete the selected cached exam(s).
1. Select the desired exam from a list of exams.
 2. Drag the exam to the **Local Exam Cache** folder.
 3. Click **Local Exam Cache** in the Folder List to ensure that caching of the exam is complete. (100% displays in the **Status** column of the cached exam.)

Opening a Cached Exam

You cannot open an exam until it has been downloaded completely

1. To open a cached exam, click the **Local Exam Cache** folder in the Folder List.
2. Double-click the exam.

Viewing Preferences of Local Exam Caching

1. Click **P** in the Control Strip to open the Preferences dialog.
2. Click the + sign in front of **Machine Preferences** to expand the list.
3. Click **Local Exam Caching**. The Local Exam Caching preferences are displayed in the right pane.
4. When you are done viewing the preferences, click **OK** to close the Preferences dialog.

Caching Exams with Prior

Caching helps to fetch the main exams and the priors that are part of the hanging to the local hard disk (caching).

NOTE

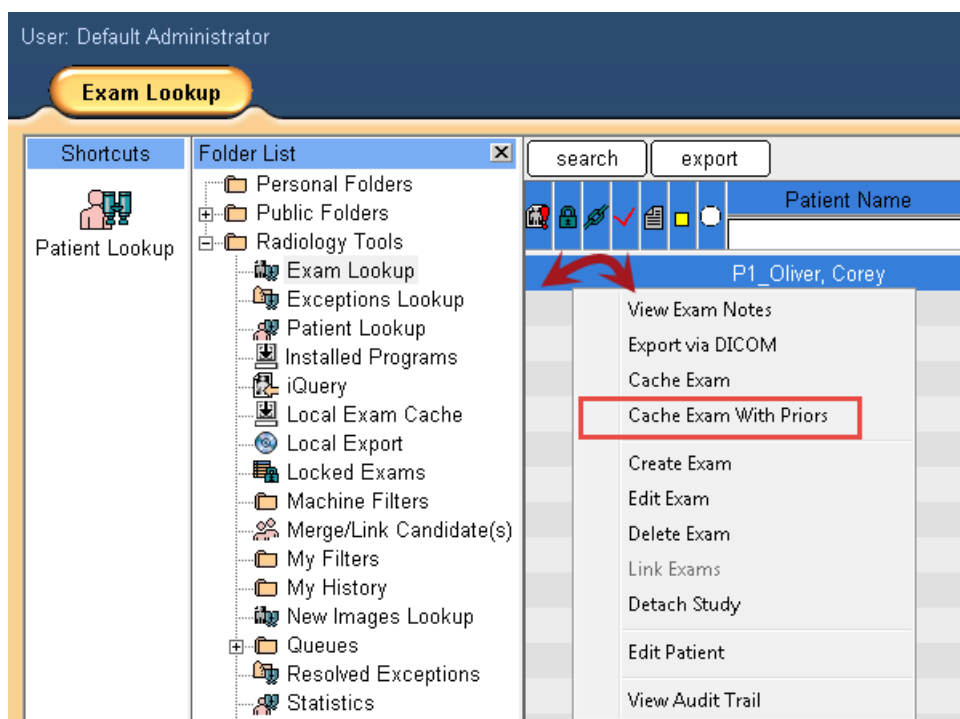
Only Priors that are part of the Hanging Protocol will be fetched to the local hard disk (caching).

To Cache Exams with Priors follow these steps:

1. From the Exam Lookup, right click on the exam to be cached to display a context menu.

NOTE

Multiple exams can be selected for caching. Ensure sufficient cache size is available when caching multiple exams. See [“Setting Local Exam Caching Preferences” on page 522](#) for more information.



2. Select **Cache Exam With Priors** to cache the exam.

NOTE

The “Cache Exam With Priors” menu will be available only if the “Enable caching of exams with priors” is selected in the System Preference -> General Preference. See [“Setting General Preferences” on page 446](#) for more details.

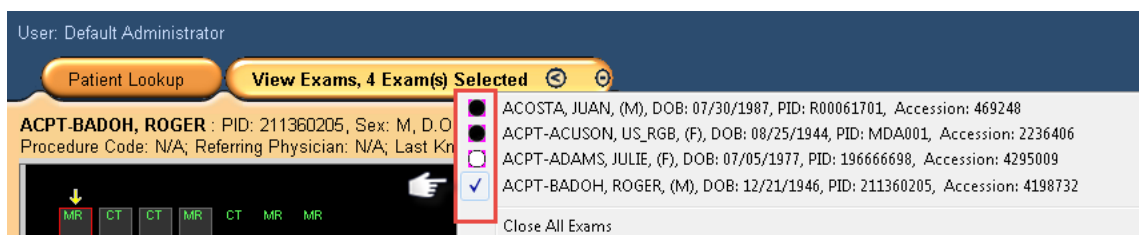
The selected exam(s) will be fetched along with the priors to the hard disk.

The status of the caching is indicated by different icons as detailed in the table below:

Icons	Description
	Exam caching in Progress
	Exam cached with priors

Icons	Description
	Exam cached without priors
	Exam caching failed

When the exams are opened on the Canvas page, the status of the cache is indicated as shown below:



NOTE

If the “Delete exams upon logout” option is not selected, the cached exams will be retained even after the user’s logging out. But, the “cache status” is not retained and does not get updated automatically. To update the cache status, the “Cache Exams With Prior” has to be selected again. See [“Setting Local Exam Caching Preferences” on page 522](#) for more information.

9 Viewing Clinical Information

Physicians base their treatment plan and diagnosis not only on their own findings but also on the diagnosis and recommendations of other specialists. This is especially true for Radiology, where typically every radiology exam that is ordered by a Referring Physician is reported on by a Radiologist and the results (called the Diagnostic Report) are provided back to the Referring Physician.

The Clinical Information dialog allows users to draw relevant clinical information when rendering diagnoses or determining treatment plans. It provides clinical decision support by displaying patient demographics, exam notes, diagnostic reports, exam history, and provider information. Therefore, the more clinical information it provides, the more clinical users are informed of the patients' imaging history and previous diagnoses.



WARNING

- **Make sure that patient demographics are properly completed, so that all patient data is available for the Radiologist and Referring Physician, and diagnosis is not delayed.**
- **Avoid editing patient data at the modality without starting a new exam. This could potentially mix patient studies and therefore cause a Duplicate UID,**

IntelliSpace PACS receives clinical data from DICOM via imaging studies and from HL7 via diagnostic reports and patient/exam registration events.

IntelliSpace PACS Radiology provides a User Preference option where administrative users can specify whether IntelliSpace PACS Radiology should use DICOM or HL7 data as the source for clinical information display on the canvas page. This option enables additional clinical information to be instantaneously assessable to radiologists when reading studies. See [“Setting Canvas Page Preferences” on page 465](#).

A HIS or RIS integrated with IntelliSpace PACS provides a rich history of the patient's imaging record. This information is invaluable for Administrators when resolving exceptions or studies not validated with any patient exam. The task of validating an exception with a patient's exam by a PACS Administrator includes accessing the patient's imaging record and deciding which exam the exception should be validated against. Therefore, to simplify administrative workflow with resolving exceptions, the Exception Handler allows direct access to the Clinical Information Dialog to view a patient's entire exam list.

You can use the Clinical Information dialog box to display the following types of exam information in a single window.

- [“Using Exam Notes” on page 136](#)
- [“Viewing Clinical Info” on page 141](#)
- [“Viewing Related Exams” on page 142](#)
- [“Viewing All Exams” on page 143](#)
- [“Viewing Current Providers” on page 144](#)

- [“Displaying and Printing the Audit Trail” on page 145](#)
- [“Displaying and Printing the Current Report” on page 148](#)

NOTE

You can add a comment for an anonymous exam (similar to an exam note). See [“Adding Comments to an Anonymous Exam” on page 76](#).

Using Exam Notes

Exam notes allow IntelliSpace PACS users to communicate setup, non-diagnostic, or diagnostic information about a patient. They can range from generic comments about an exam, to preliminary findings (“wet reads”) that other clinicians can use in their decision making.

**WARNING**

Exam Notes and Diagnostic Reports are not the same entity. Medical treatment plans should never be based on Exam Notes alone, as Exam Notes often have preliminary information. Diagnostic Reports can be used to help physicians design a medical treatment plan.

NOTE

Only users with access rights associated with specific exam note types can view or create exam notes of that type.

IntelliSpace PACS includes exam notes to address the following situations:

- Radiologists may not be in the same locations as clinicians, making communication difficult.
- Some patients (for example, an ED patient with possible acute appendicitis) may require time-critical clinical management (“wet read”).
- Sometimes, clinicians look at images before the Radiologist does. Patient care is improved if the Radiologist knows that the physician has looked at the images and made conclusions. This allows the Radiologist to contact the physician immediately if they disagree with the clinician's impressions or conclusions.
- Radiologists and clinicians want to respond to each other's findings.
- Technologists may need to add notes to the exam that are relevant for the exam (for example, “The patient could not hold his breath.”).

There are three types of pre-defined Exam Notes (Preliminary Note, Technologist Note, and Radiologist Note), and up to nine types of generic Exam Notes. The PACS administrator can modify the description of the generic note types.

Clinical Information: Exam Notes

Ordering MD: N/A DOB: Age at exam: Sex: U MRN:
 Accession #: Phone: N/A Pager: N/A Location: N/A Visit Location: N/A
 Exam Date/Time: Exam: ABDOMEN COMP Exam Code: N/A

Exam Notes (0)

Clinical Info
 Related Exams
 All Exams
 Current Providers

Subject: Note Type: Exam Note
 Exam Note
 Exam Note Type 10
 Exam Note Type 11
 Exam Note Type 3
 Exam Note Type 4
 Exam Note Type 5
 Exam Note Type 6
 Exam Note Type 7
 Exam Note Type 8

☐ Critical Note Cancel Save Note New Note

Audit Trail Close

Each Exam Note type has three tasks/roles, based on access privileges:

- Full access to the Exam Note type
- Read-only access to the Exam Note type
- Ability to Read, Delete, and Create your own Exam Notes, but with read-only access to Exam Notes created by others

If you have the proper privileges, you can

- Add, view, and delete exam notes in the **Exam Notes** pane of the **Clinical Information** dialog box, which is accessed by doing one of the following:
 - In the Canvas Page, clicking the clipboard icon in the Exam Margin
 - Right-clicking on an exam in **Patient Lookup** or **Exam Lookup** and selecting **View Exam Notes**.
- Mark an exam note as critical to alert providers of its importance. When critical exam notes are available for an exam, an icon displays in the Clinical Information dialog as well as on the clipboard icon in the Exam Margin. However, in the Worklist, the icon does not display to indicate the presence of a Critical Note.

You cannot edit an exam note that you have saved. To correct a note, you need to delete the note and create a new one.

You can set a User preference to automatically display exam notes for unread exams. See [“Setting General Preferences” on page 446](#).



WARNING

You cannot link exam notes to linked exams. For example, if you link CHEST-ABDOMEN-PELVIS exams and an exam note is attached to the CHEST exam, this exam note will not be displayed in the worklist and Canvas Page associated with the ABDOMEN and PELVIS exams. Also, the exam note might contain information on the linked exams that will not be visible to the reading physician or clinician.

- Display the **Exam Notes** pane of the **Clinical Information** dialog box in one of the following ways:

- From the Canvas Page, click the icon in the Exam Margin.



- Right-click an event in the Patient History Timeline on the Canvas Page and select **View Exam Notes**.
- Right-click an exam in **Patient Lookup** or **Exam Lookup** and select **View Exam Notes**.

Clinical Information: Exam Notes

Ordering MD: N/A DOB: Age at exam: Sex: U MRN:
 Accession #: Phone: N/A Page: N/A
 Exam Date/Time: Exam: ABDOMEN COMP Location: N/A
 Exam Code: N/A Visit Location: N/A

Exam Notes (4)	Date / Time	Author	Subject	Note Type
Clinical Info	6/13/2017 15:56:55	Default Administr...	Another missed issue	Exam Note Type 6
Related Exams	6/13/2017 15:56:03	Default Administr...	Critical issue	Exam Note Type 9
All Exams	6/13/2017 15:55:34	Default Administr...	Test Preliminary Note	Preliminary Note
Current Providers	6/13/2017 15:55:10	Default Administr...	Test Exam Note	Exam Note

Subject: Note Type:

☐ Critical Note

Creating Exam Notes

You can create up to 25 exam notes (up to 5,000 characters) for each exam. You can also mark exam notes as critical by selecting the Critical Note check box.



WARNING

If immediate medical treatment is needed, or if you disagree with a prior exam note, contact the treating physician immediately. You should not rely on creating a critical exam note in these situations.

1. Display the **Exam Notes** pane of the **Clinical Information** dialog box in one of the following ways:
 - From the Canvas Page, click the clipboard icon in the Exam Margin.
 - Right-click on an event in the Patient History Timeline on the Canvas Page and select **View Exam Notes**.
 - Right-click on an exam in **Patient Lookup** or **Exam Lookup** and select **View Exam Notes**.
2. Click **New Note**. The Exam Notes types that you have access rights to display.
3. The **Subject**, **Note Type**, and note area become active.
4. Enter the subject of the note. This appears in the summary when the exam note is listed in the **Clinical Information** dialog box.
5. Select a note type from the list. Three types of pre-defined exam notes and up to seven generic types (modified by the PACS Administrator) are supplied.
 - **Exam Note** for general information
 - **Preliminary Note** for preliminary findings
 - **Technologist Note** for communicating information about the exam for the referring physician or Radiologist
6. If desired, select the **Critical Note** check box to alert providers of its importance. Critical exam notes are marked with an icon.
7. Type the exam note. (You can also paste clipboard text from another application into the exam note using **Ctrl-V**.)
8. Click **Save Note**. The exam note is saved and summary information about the exam note is displayed.

NOTE

When a user creates an Exam Note, the system audits the event and displays the event in the Exam Audit Trail. When user accounts are mapped using Active Directory (AD), the audit event will indicate the AD username.

Viewing Exam Notes

You select exam notes in the **Clinical Information** dialog box to view their content. The most recent exam notes are listed first. Summary information about the exam note is displayed, including an icon indicating whether the note is critical, the date and time the note was written, the author of the exam note, the subject, and the note type. You can sort the notes by clicking on a column heading.

In both IntelliSpace PACS Enterprise and IntelliSpace PACS Radiology, when the **Automatically Display Exam Notes for unread exams** user preference is enabled (see [“Setting General Preferences” on page 446](#)), the first exam opened is the main exam and the Exam Notes for that exam (if any) automatically open. Opening subsequent exams from the Patient History timeline – or Relevant Exams (ISR only) – does not display the Exam Notes for the subsequent exam(s). You must manually click the Exam Notes icon for that exam to open those exam notes.

In the IntelliSpace PACS Radiology User Preferences, you can set the Canvas Page Mode to either patient-based or exam-based (see [“Setting General Preferences” on page 446](#)). If you have selected patient-based and you open a second exam for a patient who has an exam already open, an error message displays: “You already have an exam opened as the main exam. Please close the exam before opening another main exam”. In order to view another exam, you must open the exam from the timeline (in the Canvas Page) instead.

NOTE

You can always click the Exam Notes icon for an exam displayed on the Canvas Page to view any associated exam notes for that exam.

1. Display the **Exam Notes** pane of the **Clinical Information** dialog box in one of the following ways:
 - From the Canvas Page, click the icon in the Exam Margin.
 - Right-click on an event in the Patient History Timeline on the Canvas Page and select **View Exam Notes**.
 - Right-click on an exam in the **Patient Lookup** or **Exam Lookup** and select **View Exam Notes**.
2. Select the exam note you wish to view. The note is displayed at the bottom of the dialog box.

Printing Exam Notes

IntelliSpace PACS supports the printing of all types of exam notes from the Clinical Information dialog. To print an exam note, right-click an exam note and select **Print** from the right-click menu.

NOTE

When a user prints an Exam Note, the system audits the event and displays the event in the Exam Audit Trail. When user accounts are mapped using Active Directory (AD), the audit event will indicate the AD username.

Deleting Exam Notes

1. Display the **Exam Notes** pane of the **Clinical Information** dialog box in one of the following ways:
 - From the Canvas Page, click the icon in the Exam Margin.
 - Right-click on an event in the Patient History Timeline on the Canvas Page and select **View Exam Notes**.
 - Right-click on an exam in the **Patient Lookup** or **Exam Lookup** and select **View Exam Notes**.
2. Select the exam note you wish to delete.
3. Click **Delete Note**. A confirmation message displays.
4. Click **Yes** to delete the exam note or **No** to cancel.

NOTE

When a user deletes an Exam Note, the system audits the event and displays the event in the Exam Audit Trail. When user accounts are mapped using Active Directory (AD), the audit event will indicate the AD username.

Viewing Clinical Info

The **Clinical Info** pane of the **Clinical Information** dialog box allows you to view signs and symptoms, patient history, and allergies, that are relevant to the exam and give background information on the patient. If available, an Order Callback Number (a phone number for the Radiologist to call the ordering or referring physician) and Alternate Exam Code field (a second Exam Code field that in some organizations is specified as a Universal Service ID) are displayed.

Clinical Information: Clinical Info

Ordering MD: N/A Accession #: Exam Date/Time: DOB: Age at exam: Sex: U MRN: Phone: N/A Exam: ABDOMEN COMP Exam Code: N/A Pager: N/A Location: N/A Visit Location: N/A

Exam Notes (4)

Clinical Info

Related Exams

All Exams

Current Providers

Signs and Symptoms:

History:

Comments:

Alternate Exam Code:

Alternate Exam Description:

Order Callback Numbers:

Audit Trail Close

The information in this pane helps physicians understand why a patient has been referred to Radiology. For example, the Radiologist will look for different abnormalities in a cancer case, compared to a trauma case.

1. Display the **Clinical Info** pane of the **Clinical Information** dialog box in one of the following ways:
 - From the Canvas Page, click the icon in the Exam Rack.
 - From the **Patient Lookup**, **Exam Lookup** or a worklist that displays exams and has the **Has Notes** column visible, right-click the exam and select **View Exam Notes**.
2. Click **Clinical Info** in the **Clinical Information** dialog box. The **Signs and Symptoms**, **History**, and **Comments** display for the exam.
3. Review the information.
4. Select another pane from the **Clinical Information** dialog box if desired, or click **Close**.

Viewing Related Exams

Related exams are filtered based on body part. You can use the **Related Exams** pane of the **Clinical Information** dialog box to see a list of related exams for the current exam and patient in the context of a report. For example, if you are doing a tumor response assessment, you would want to compare images between two or more exams to determine the progress of a disease or treatment.

Clinical Information: Related Exams

Ordering MD: N/A DOB: Age at exam: Sex: M MRN:
 Accession #: Phone: N/A Exam: MR BRAIN W AND W/O CONTRAST Pager: N/A Location: N/A Visit Location: N/A
 Exam Date/Time: Exam Code: HEAD

Exam Notes (0)	Date / Time	Accession #	Status	Exam Code	Modality	Body Part
Clinical Info	7/2/2011 4:17:14	DDB141022-014	T	HEAD	MR	HEAD
Related Exams	10/21/2010 5:54:25	DDB141022-016	T	HEAD	MR	HEAD
	9/18/2009 23:27:20	DDB141022-020	T	HEAD	MR	HEAD
All Exams	9/18/2009 23:27:20	1	S	HEAD	MR	HEAD
Current Providers	Report is not available					

Audit Trail Print Close

Patients sometimes have multiple exams in a 24-hour period while their state is being monitored. Therefore, it is critical to be able to quickly select, navigate, and compare relevant reports.

1. Display the **Related Exams** pane of the **Clinical Information** dialog box in one of the following ways:
 - From the Canvas Page, click the icon in the Exam Rack.
 - From the **Patient Lookup**, **Exam Lookup** or a worklist that displays exams and has the **Has Notes** column visible, right-click the exam and select **View Exam Notes**.
2. Click **Related Exams** in the **Clinical Information** dialog box, and review the information. You can click on a related exam to display its report, if that exam has a report.
3. Select another pane from the **Clinical Information** dialog box if desired, or click **Close**.

Viewing All Exams

You can use the **All Exams** pane of the **Clinical Information** dialog box to select and view all exam information for the patient. This allows you to compare the results of patient exams. For each exam, IntelliSpace PACS displays the Date/Time, Accession #, Status, Exam Code, Modality, and Body Part.

Clinical Information: All Exams

Ordering MD: N/A DOB: Age at exam: Sex: M MRN:
 Accession #: Phone: N/A Exam: MR BRAIN W AND W/O CONTRAST Pager: N/A Location: N/A Visit Location: N/A
 Exam Date/Time: Exam Code: HEAD

	Date / Time	Accession #	Status	Exam Code	Modality	Body Part
Exam Notes (0)	6/9/2012 1:07:25	DDB141022-011	T	HEAD	MR	HEAD
Clinical Info	7/2/2011 4:17:14	DDB141022-014	T	HEAD	MR	HEAD
Related Exams	10/21/2010 5:54:25	DDB141022-016	T	HEAD	MR	HEAD
All Exams	9/18/2009 23:27:20	DDB141022-020	T	HEAD	MR	HEAD
Current Providers	9/18/2009 23:27:20	1	S	HEAD	MR	HEAD

Audit Trail Print Close

- Display the **All Exams** pane of the **Clinical Information** dialog box in one of the following ways:
 - From the Canvas Page, click the icon in the Exam Rack.
 - From the **Patient Lookup**, **Exam Lookup** or a worklist that displays exams and has the **Has Notes** column visible, right-click on the exam and select **View Exam Notes**.
- Click **All Exams** and review the information.
 - To sort, click on a column heading.
 - You can click an exam to display its report, if that exam has a report.
 - If the selected exam has no report available, a message displayed below the list of exams.
- Select another pane from the **Clinical Information** dialog box if desired, or click **Close**.

Viewing Current Providers

You use the **Current Providers** pane of the **Clinical Information** dialog box to view information on all the providers associated with the report and patient, including contact information. Often, referring providers have questions or comments about a report. Having easy access to the associated providers with each report gives referring providers the information they need to contact the Radiologist and discuss the report.

For each provider, IntelliSpace PACS displays the following information (if available):

- Type of provider (for example, Admitting, Attending, Consulting)
 - Name of provider
 - Phone numbers
 - Address
 - Attending Physician
1. Display the **Current Providers** pane of the **Clinical Information** dialog box in one of the following ways:
 - From the Canvas Page, click the icon in the Exam Rack.
 - From the **Patient Lookup**, **Exam Lookup** or a worklist that displays exams and has the **Has Notes** column visible, right-click the exam and select **View Exam Notes**.
 2. Click **Current Providers** and review the information.
 3. Select another pane from the **Clinical Information** dialog box if desired, or click **Close**.

Displaying and Printing the Audit Trail

PACS Administrators who are performing HIPAA compliance auditing or troubleshooting are usually accessing exams and viewing images within IntelliSpace PACS Enterprise or IntelliSpace PACS Radiology. The admin's workflow is simplified by having the Audit Trail accessible from within the Clinical Information dialog of the following significant HL7, DICOM, and user-initiated events associated with an exam's Accession Number:

The following actions are audited and visible in the IntelliSpace PACS AdminTool; some actions are visible in the **Audit Trail** dialog in IntelliSpace PACS.

Creating a patient	Viewing a patient record	Updating a patient record
Deleting a patient	Linking or unlinking a patient	Merging a patient
Creating or deleting an exam	Updating an exam record	Linking or unlinking exams
Viewing an exam	Printing an exam to paper or film	Creating an exception
Scheduling an exam	Dictating an exam	Editing the scheduled date/time of an exam
Beginning an exam	Canceling an exam	Changing the exam status to Taken
Completing an exam	Force unlocking an exam	Viewing an exam note
Creating an exam note	Deleting an exam note	Viewing an exam report
Finalizing a report	Changing an Exam Code/Modifier	Resolving an exception and attaching a study to an exam
Opening a report	Transcribing a report	Acknowledging a duplicate UID warning
Detaching a study from an exam	Marking an exam unread	Exporting an exam image to clipboard or disk
Marking an exam read	Deleting an exception/study	Printing an exception to paper or film
Viewing an exception/study	Exporting an exam/study to a network device	Exporting to CD/DVD drive via Media Viewer
Exporting an image to the clipboard or disk	Updating a password	Attempting to do something that might be destructive to the system (for example, an SQL injection)
Logging into or out of the system	Adding, updating, or deleting a presentation state for a study	Changing the UID of a study
Receiving a query from an known or unknown DICOM device (meaning that device is not correctly configured).	Recovering previously deleted images	Caching an exam locally
Deleting one or more images from a study	Acknowledging a VIP patient warning	Reading VIP patient data

Caching an exception locally Requesting a VIP patient exam First Study Resolved

Diagnostic Report Printed

In addition, the **Audit Trail** dialog displays the date and time the event occurred, the status of the event (if applicable), report status (if applicable), the type of event, and who performed the event/action. You can also print the Audit Trail.

Audit Trail : Accession #: 452217027901/730

Patient Name: ACPT1- [REDACTED]MRN #: [REDACTED]DOB: [REDACTED]

Accession #: 452217027901Exam Date: 7/19/1999 6:56:30 PMExam Code: N/A

	Time	Status	Report Status	Event	Who / Notes
	1:42 PM			Note Create	by ISITE\Administrator
	1:42 PM			Note View	by ISITE\Administrator
	1:43 PM			Note Create	by ISITE\Administrator
	1:43 PM			Note View	by ISITE\Administrator
	1:43 PM			Note Create	by ISITE\Administrator
	1:43 PM			Note View	by ISITE\Administrator
	1:45 PM			Note Create	by ISITE\Administrator
	1:45 PM			Note View	by ISITE\Administrator
	2:02 PM			Note View	by ISITE\Administrator
	3:17 PM			Note View	by ISITE\Administrator
	3:17 PM			Note Delete	by ISITE\Administrator

Print

Close

In the **Audit Trail** dialog, the Accession number is displayed in the title bar. Below that is the Patient Name, MRN #, DOB, Accession #, Exam Date, and Exam Code.

1. Open the **Clinical Information: Exam Notes** dialog.
2. In the bottom left corner of the dialog, click **Audit Trail**.
3. The Audit Trail for the specific Accession # displays.
4. Review the information displayed.
5. Click **Print** to print the list of events.
6. In the Print dialog, select a Printer and any options you prefer and then click **Print**.
7. When you are done, click **Close** to close the Audit Trail dialog.
8. Click **Close** again to close the Clinical Information: Exam Notes dialog.

NOTE

An asterisks (*) and a caution message is displayed to indicate any unauthorized audit events. This indication is displayed **ONLY** when an audit event is tampered/changed.

Audit Trail : Accession #:58D3BEEA0001 [X]

Patient Name: [REDACTED] MRN #: [REDACTED] DOB: [REDACTED]
 Accession #: [REDACTED] Exam Date: 3/23/2017 5:26:18 AM Exam Code: N/A

Caution * : Audit event has unauthorized entries.

▼ 4/6/2017

	Time	Status	Event	Who / Notes
	3:03 AM	C	First Study Resolved *	by iSiteService

Print Close

Displaying and Printing the Current Report

If a report exists, the **Diagnostic Report** pane of the **Clinical Information** dialog box displays information in two tabs: **Current** and **History**.

- The **Current** tab displays the exam information, patient information, providers, and report of the Radiologist's impressions for the exam. You can print this report or view it on screen. When you print the report, all information is printed, even if some of the categories are not expanded on screen.
- The **History** tab allows you to see the complete revision history for the report. Medical treatments are based on diagnostic reports. There might be multiple reports for the same exam, potentially with updated information. Therefore, it is important to go back in time to see the full history of reports received for an exam.

**WARNING**

IntelliSpace PACS stores all timestamp information in GMT. Microsoft Windows then localizes this information so that all timestamps are presented in local time (as configured on the workstation). Because Microsoft may make changes in its operating systems to account for Daylight Savings Time in various time zones around the world, please ensure that user machines have the most current Microsoft updates installed so that correct times are displayed in IntelliSpace PACS reports.

The following information is displayed at the top of the **Diagnostic Report** pane:

- **Patient Information:** Name, MRN, Sex, Birth Date
- **Provider Information;** Ordering MD, Phone, Pager
- **Exam Information:** Accession Number, Exam Code, Location

1. Display the **Diagnostic Report** pane of the **Clinical Information** dialog box in one of the following ways:

- From the Canvas Page, click the icon in the Exam Margin.



- Right-click on an event in the Patient History Timeline on the Canvas Page and select **Show Report**.
- From the **Patient Lookup**, **Exam Lookup** or a worklist that displays exams and has the **Report Available** column visible, right-click and select **Show Report**.
- Click **Diagnostic Report** while viewing another pane in the **Clinical Information** dialog box.

2. If desired, click the + sign to expand and view the **Exam Information**, **Patient Information**, **Providers**, or **Preliminary Report** sections.
3. Click **Print** for a paper copy of the current report. The printed version includes the patient and exam information, even if these sections are not expanded on screen.
4. Select another pane from the **Clinical Information** dialog box if desired, or click **Close**.

Displaying Earlier Reports

1. Display the **Diagnostic Report** pane of the **Clinical Information** dialog box in one of the following ways:
 - From the Canvas Page, click the icon in the Exam Rack.
 - Right-click on an event in the Patient History Timeline on the Canvas Page and select **Show Report**.
 - From the **Patient Lookup**, **Exam Lookup** or a worklist that displays exams and has the **Report Available** column visible, right-click and select **Show Report**.

2. Click the **History** tab. The top part of the window displays information about the previous reports for this exam, including the date and time of the report, the report status (Corrected, Final, or Preliminary), and the name of the provider. When you select a report, the bottom part of the window displays information about the report.
3. Select another pane from the **Clinical Information** dialog box if desired, or click **Close**.

10 Filtering Worklists

A filter is a named set of search criteria. The key to driving enterprise productivity is to provide easy and consistent search and filter functionality to all users of IntelliSpace PACS so they do not waste time building or editing worklists. IntelliSpace PACS provides extensive search and filter capabilities, and includes some filters you can use to quickly find the exam and/or exception information you are interested in. Three types of filters are available from the Folder List for selecting, saving, and modifying filters. By default, up to 200 exams and/or exceptions display in the worklist. If additional exams or exceptions match your criteria, a message displays to alert you to add more search criteria. You or your System Administrator can create additional filters based on criteria that you intend to use repeatedly.

NOTE

The maximum number of filters is 250 per type of filter, which means that a total of 750 filters can be created.

- **User Filters:** You can define personal filters that include read and unread exams, exams and exceptions, or only exceptions. User filters are listed under **My Filters** in the Folder List. In addition, user filters can be organized into folders within **My Filters**.
- **System Filters:** System Administrators can modify the supplied system filters, and create and modify the system filters to be used in their organization. You can use system filters to search for specific exams and/or exceptions. System filters are listed under **System Filters** in the Folder List. In addition, system filters can be organized into folders within **System Filters** in the Folder List. The System Filters data shall be updated on demand. This can be achieved by expanding the **System Filters** folder and/or its subfolders.
- **Machine Filters:** System Administrators can create and modify filters for the computer IntelliSpace PACS is running on. These filters are used for computers assigned to workstations attached to specific modalities, and are available to any user on that computer. You can use machine filters to search for specific exams and/or exceptions. Machine filters are listed under **Machine Filters** in the Folder List. See [“Sample Machine Filters for Technologists and Radiologists”](#) on page 166.

Worklists display matching exams (if any) on top and exceptions (if any) on the bottom. Each area has a separate set of mandatory and optional columns. You can display exams, exams and exceptions, or only exceptions for new and modified filters.

There are permissions that determine whether you can access the following:

- Manage user filters
- View and manage machine filters
- View and manage system filters

The filters you can add, edit, or delete are based on your privileges. The procedures for creating, editing, deleting, and selecting filters are the same for User, System, and Machine filters. When you select a filter, a list of exams and/or exceptions matching the filter's criteria displays.

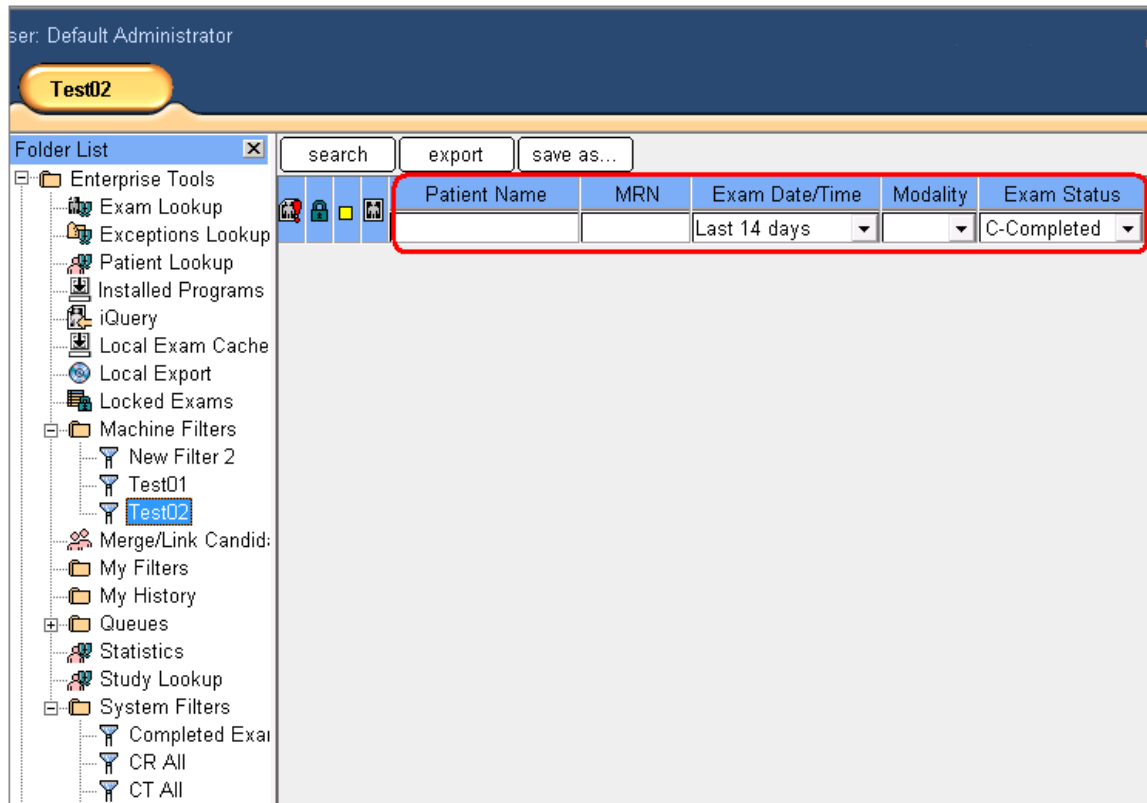


Fig. 23: Worklist Filters

Selecting a Filter

1. From the **Folder List**, click the + sign next to the desired filter type:
 - Machine Filters
 - My Filters
 - System Filters
2. Click the filter you want to use to display exams and/or exceptions. The name of the filter displays in the yellow tab above the Shortcuts/Folder List columns and the filter criteria display in the right pane.
3. Click **Search** to generate a query based on the filter criteria.
4. Click **Export** to save the query results as a CSV (comma-separated values) file.
5. Click **Save As** to save as a new filter. The **Add Filter** dialog displays, where you can rename and change the criteria for the new filter.

Arranging Exam and Exception Columns in a Worklist

Filters have supplied settings. When you open a filter, any changes you make to the column width, sort order, or displayed columns are saved. If the filter is a User or Machine filter and you have privileges to manage these, the worklist header column configuration, which includes visible columns, re-ordering of column order, and column width, is saved when you exit IntelliSpace PACS.

The column reordering for a **System Filter** is saved for each user on every System Filter.

Showing or Hiding an Exam Worklist Column

1. Right-click in the exam search criteria area. A menu displays, showing a check mark to the left of each displayed column. Column names that always display are grayed out.
2. Select the search criteria you want to show or hide. Displayed icons and search criteria are checked; hidden criteria are unchecked. You cannot hide the fields that are grayed out.

Showing or Hiding an Exception Worklist Column

1. Right-click in the column area, above the list of exceptions. A menu displays, showing a check mark to the left of the active criteria type.
2. Select the columns you want to show or hide. Shown columns are checked; hidden columns are unchecked. You cannot hide the fields that are grayed out.

Rearranging Worklist Columns

You can click and drag columns in an exam or exception worklist to rearrange their order. This allows you to customize in what order exam information is displayed.

Click and drag a column to the position you want, and release the mouse button.

Rearranging a Filter's Columns

1. Right-click the filter in the Folder List and then click **Edit Filter**. The **Add Filter** dialog box displays.
2. Click **Exam Worklist Columns** or **Exception Worklist Columns**, depending on the columns you want to rearrange. The **Worklist Columns** dialog box displays.
3. In the right pane of the dialog, select the column header you want to rearrange and click **Move Up** or **Move Down** until the header is in the desired position. Note that you cannot move required columns and there are limits on how far you can move certain columns.
4. Click **OK** when you are done to save your changes and close the Worklist Column dialog box.
5. Click **Save** to close the Add Filter dialog.

Searching in Exam and Exception Worklists

You can search for exams and exceptions in a worklist and either view this information as you are working, or save it as a new filter. Depending on how they are defined, worklists can display one of the following:

- Exams only
- Exceptions only (Resolved or Unresolved)
- Exams and exceptions

Note the following about searching for exams and exceptions:

- For filters displaying exams, exceptions, or both exams and exceptions, you can specify the desired start and end dates by selecting **Custom** from the **Exam Date/Time** list or **Exception Date/Time** list. If a **Custom** date is set to more than 7 days, the filter is not auto-refreshed every one minute. Also, if **All** is selected as the date when the worklist is created, the filter is not auto-refreshed every one minute. See [“Creating Filters” on page 158](#).
- Only exact matches for Accession # and MRN are supported.
- The maximum number of exams matching your search criteria is configurable. You will be notified if a search returns more exams than the maximum allowed. The message will display the total number of exams returned by the search
- The total number of exception studies matching your search criteria is displayed. The message will display the total number of exceptions returned by the search.

Searching in a Worklist That Only Displays Exams

1. Select a filter from the Folder List that displays exams.
2. Enter the desired search criteria in the search area.
3. Click **Search** or press **Enter**. A list of exams that match your search criteria displays.

Searching in a Worklist that Only Displays Exceptions

1. Select a filter from the Folder List that displays exceptions.
2. Enter the desired search criteria in the search area.
3. Click **Search** or press **Enter**. A list of exceptions that match your search criteria displays.

NOTE

Any exception opened from the exception worklist stays highlighted in the list after you have closed the exception, if the exception has not been resolved.

Searching in a Worklist that Displays Exams and Exceptions

1. Select a filter from the Folder List that displays exams and exceptions.

2. Enter the desired search criteria in the search area for exams, at the top of the window. Note the following about mirrored filter criteria:
 - If any of the following **General** criteria (from the **Add** or **Edit Filter** dialog box) are changed in the Exam worklist results (at the top), that change is mirrored in the Exception worklist results (at the bottom). See [“Creating Filters” on page 158](#). These fields are displayed in bold to indicate that their value comes from the Exam worklist results: **Body Part**, **Organization**, **Modality**, and **Performing Resource**.
 - If the **Mirror** field was selected when the filter was created or edited, the **MRN** and/or **Patient Name** fields are mirrored in the worklist. This means that whatever you enter in the MRN and/or Patient Name in the Exam part of the worklist is mirrored in the corresponding field in the Exception part of the worklist. If mirroring is enabled, an icon displays to the left of the **MRN** and/or **Patient Name** field. You can click this icon to disable mirroring, and click it again to re-enable mirroring for that worklist. Clicking this icon does not change the original settings of the filter.
3. Click **Search** or press **Enter**. A list of exams and exceptions that match your search criteria displays.

The search criteria you enter for exams is translated for exceptions as follows:

Exam Query Fields	Exception Query Fields
Organization	Organization
Modality	Modality
Performing Resource	Performing Resource
Subspecialty	-
Patient Name	Patient name
Date of birth	Date of birth
MRN	MRN
Accession #	Accession #
Exam Date/Time	Exception Date/Time
Procedure Status	-
Procedure Code	-
Body Part	Body Part
Referring Physician (Ordering Provider)	DICOM Tag 0x00080090
Ordering Location	-
Priority	-
Patient Class	-

**WARNING**

When running a worklist query using a patient's MRN, it is possible that the non-numeric characters may be stripped from the MRN, possibly causing a mismatch of patient data between two or more patients. Make sure you validate the MRN against the patient name to ensure the returned patient data matches the patient you are looking for.

Searching for Exams or Exceptions by Patient Name

You can use patient names to search for exams or exceptions:

For example, to search for a patient whose last name is **Doe** and first name is **John**, the following search criteria can be performed:

Search Criteria	Results
Doe	Doe, John
John	No result
, John	Doe, John

The table below details the search criteria for linked patients, John Doe from organization DEFAULT and John Doe M from TEST:

Search Criteria	Results
JOHN*	Either John Doe or John Doe M based on the query results.
JOHN PHILIP M	John Doe or John Doe M based on the query results.
JOHN* organization "DEFAULT"	John Doe . Since the query also includes the organization, the patient name that matches in the selected organization will be displayed.
JOHN* organization "TEST"	John Doe M . Since the query also includes the organization, the patient name that matches in the selected organization will be displayed.

NOTICE

Searching with the patient's middle name might not fetch the expected result.

NOTE

You can also search for exams by multiple referring physician names. Separate last names with semi-colons and first and last names with commas (for example, "Smith;Jones" or "Smith,Robert"). You can also include the wildcard character (%) to search for partial last or first names (for example, "Smi%" or "Smi%,Rob%").

1. Display a filter that displays exams, exceptions, or exams and exceptions.
2. Enter all or part of the patient's last name.
3. Click **Search** or press **Enter**. Exams or exceptions for patients in the specified time or date range are displayed.

Searching for Exams or Exceptions by Date

You can specify a supplied date/time names to search for exams or exceptions, or specify a custom date range using a calendar control.

NOTE

When you enter an MRN or Accession #, the date range you specify is not used in the search.

1. Display a filter that displays exams, exceptions, or exams and exceptions.
2. In the **Date/Time** column, select a time or date range.
3. Click **Search** or press **Enter**. Patients with exceptions who match the name search criteria are displayed.

NOTE

The Today item in Exam Date/Time, Exception Date/Time, or Filter Date filters on all items that are available for today, starting from 00:00 a.m. until 23:59 p.m.

Searching for Exams or Exceptions Using a Custom Date Range

1. Display a filter that displays exams, exceptions, or exams and exceptions.
2. In the **Date/Time** column, select **Custom**. A **Start Date** and **End Date** window displays a range of Today's date for both start date and end date. If a **Custom** date is set to more than 7 days, the filter is not auto-refreshed every one minute. Also, if **All** is selected as the date for the when the worklist is created, the filter is not auto-refreshed every one minute.
3. Enter the desired start and end dates, or click the arrow for either date to enter the date using the calendar control.
4. Click **OK** when you have entered the desired dates.
5. Click **Search** or press **Enter**. IntelliSpace PACS displays matching exams and exceptions for patients in the specified date range.

Stripping Leading Zeros from MRN Searches

You can choose whether or not to have the client application strip leading zeros from MRN searches. The option is off (disabled) by default, but you can ask CARE to enable it if you want this option. With this option disabled (off—the default state):

- You can enter any text value in the MRN search field. Explicit wildcards (e.g., %,?) are allowed, and the client appends implicit wildcards.
- In a search, the client application does not strip leading zeros; only patients with MRNs starting with or equal to the exact MRN search value are returned.

With this option enabled (on):

- You can enter only a numerical value in the MRN search field. Explicit wildcards (e.g., %,?) are not allowed, and the client application does not add implicit wildcards. If you enter any character other than 0 through 9, an error message is displayed.
- In a search, the client application removes leading zeros from the search value you entered, and the resulting value is matched against the numeric version of each MRN in the database (i.e., the MRN with all non numbers and leading zeros removed). Because wildcards are not supported, the entire numeric MRN must be entered to get a match.

Sorting Results

By default, the selected sort column is set to display all exams on top. Clicking the column header in the exam or exception worklist sorts the contents of the worklist using the selected header as the primary sort column. Clicking the current sort column toggles the sort order between ascending and descending.

The secondary sort criteria for Exam and lookup filters is the Exam Date/Time descending (with newest exams on top). Exceptions are sorted by Exception Date/Time descending (with newest exceptions on top).

Click the blue column heading that you want to sort by. An arrow appears in the column heading to display whether the order is ascending (A-Z or 1-9) or descending order (Z-A or 9-1). To reverse the order, click the same column heading again.

Creating Filters

You can create filters in one of the following ways:

- By selecting an existing filter from the Folder List and clicking the **Save As...** button in the right pane (above the filter criteria), which opens the **Add Filter** dialog.
- By right-clicking **Machine Filters**, **System Filters**, or **My Filters** in the Folder List, selecting **Create Filter** in the right-click menu, defining the filter criteria in the **Add Filter** dialog box, and saving the filter.

See [“Sample Machine Filters for Technologists and Radiologists” on page 166](#). See [“Commas Used as Delimiters in Filters” on page 166](#).

For the two mammography filters, **Unread** and **For Discussion**, see [““Not Read By Me” Filter” on page 427](#) and [““For Discussion” Filter” on page 430](#).

1. Select a filter from the Folder List.
2. Click **Save As**. The **Add Filter** dialog box displays.

3. Enter the **Name** and **Description** for the new filter. The **Name** is required.
4. Select whether you want the **MRN** and/or the **Patient Name** to be mirrored from the Exam worklist to the Exception worklist. The **Mirror** field is only enabled when you add or edit a filter that contains both exams and exceptions. When you are using the filter, you can change the mirroring properties for these fields after the filters have been defined.
5. Select whether you want the filter to be refreshed with updated information every 1 minute by selecting the **Auto-refresh** check box. This setting is applied to all filters for all ranges, except **Custom** date ranges you set in the Exam or Exception worklist. If a **Custom** date is set to more than 7 days, the filter is not auto-refreshed. Also, if **All** is selected as the date for the when the worklist is created, the filter is not auto-refreshed every one minute.
6. In the **General Criteria** tab, select one of the Available Filter Criteria – **Body Part**, **Modality**, **Organization**, and **Performing Resources** – and click -> to move it to the Filter On column.
When adding a **Performing Resource** in the **General Criteria** tab, you can use a dictionary picker to select or remove criteria. To do this, press the button to the right of **Equals** or **Does Not Equal**. This opens the **Performing Resources** dictionary, enabling you to search for the Performing Resources you want to add or remove. Enter search values in the **Organization**, **Code**, and **Description** fields, then click **Search**. You can use the **Apply** button to add or remove multiple Performing Resources. When you are done, click **OK**. The criteria is added to the **Filter Summary**.

When adding a **Body Part** in the **General Criteria** tab, you can select a pre-defined body part from a drop-down list in the **Equals** or **Does Not Equal** field. You can also enter a free-text for the body part name.

7. The name of the criteria (for example, Body Part) also displays in the Criteria field as well as in the Filter Summary field.
8. In the **Equals** and **Does not Equal** fields, enter additional parameters. Click **Update Criteria** when done, and those parameters display in the Filter Summary.

CriteriaName	Contains	Does not contain
Body Part	upper extremity	lower extremity

9. You can add more criteria from the Available Filter Criteria list by following Steps 4 through 6. To remove a criteria, select it in the **Filter Summary** and click **Remove Criteria**.
10. Optionally, to create an Exam Worklist filter, do the following:
 - The **Exam Worklist** check box is selected by default, which includes exams with or without images in the new filter. However, you can also select **Exception Worklist** or you can select both.
 - Select the **Exam Date** from the dropdown list.
 - Click the **Exam Worklist Criteria** tab and then select values from the **Available Filter Criteria** list. Click the -> arrow to move these values to the **Filter On** column, which then automatically populates the **Criteria:** and **Filter Summary** fields.
 - When adding an **Ordering Location**, **Exam Code**, or **Referring Physician** from the **Exam Worklist Criteria**, you can use a dictionary picker to select or remove criteria. To do this, press the button to the right of **Equals** or **Does Not Equal**. This opens the specified dictionary, enabling you to search for the items you want to add or remove. Enter search values in the dictionary window, then click **Search**. You can use the **Apply** button to add or remove multiple items. When you are done, click **OK**. The criteria is added to the **Filter Summary**.

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Philips

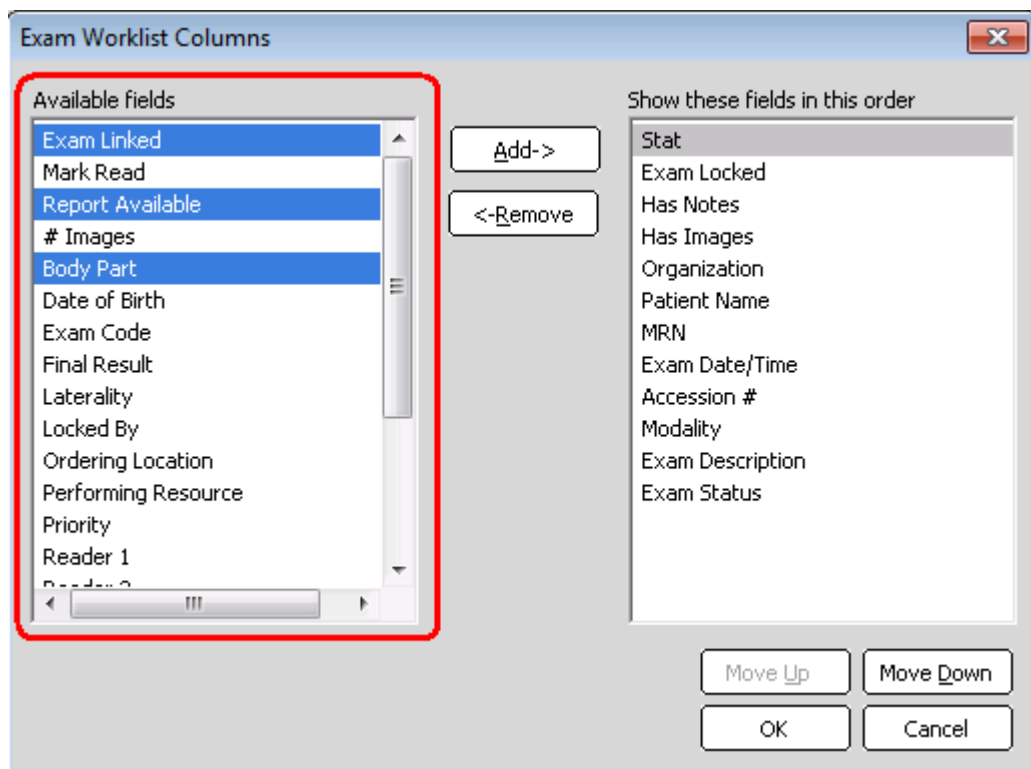
- When adding an **Ordering Location** or **Exam Code** from the **Exam Worklist Criteria**, you can use a dictionary picker to select or remove criteria. To do this, press the button to the right of **Equals** or **Does Not Equal**. When adding a **Referring Physician**, press the button to the right of **Contains** or **Does Not Contain**. This opens the specified dictionary, enabling you to search for the items you want to add or remove. Enter search values in the dictionary window, then click **Search**. You can use the **Apply** button to add or remove multiple items. When you are done, click **OK**. The criteria is added to the **Filter Summary**.
 - You can enter comma-separated multiple values for the **Exam Code**, **Ordering Location**, and **Subspecialty** fields. For the **Referring Physician** field, use a comma between the first name and last name and a semi-colon (;) between pairs of first and last names.
 - Enter additional parameters in the **Equals** and **Does Not Equal** text fields and click **Update Criteria**.
 - Click **Exam Worklist Columns** to define the columns for the worklist display. See 'Specifying the Columns for an Exam Worklist' (see page 208).
11. Optionally, to create an Exception Worklist filter, do the following:
 - Select the **Exception Worklist** check box and choose **Resolved** or **Unresolved** if you want exceptions to be included in the new filter.
 - Select the **Exception Date** from the dropdown list.
 - Click the **Exception Worklist Criteria** tab and then select values from the **Available Filter Criteria** list. Click the -> arrow to move these values to the **Filter On** column, which then automatically populates the **Criteria:** and **Filter Summary** fields. You can create the following filters for exams, unresolved exceptions, and resolved exceptions: Exam (Unresolved Exceptions), Exams Only, Unresolved Exceptions Only, Exam (Resolved Exceptions), Resolved Exceptions Only.
 - Enter additional parameters in the **Equals** and **Does Not Equal** text fields and click **Update Criteria**.
 - Click **Exception Worklist Columns** to define the columns for the worklist. See 'Specifying the Columns for an Exceptions Worklist' (see page 209).
 12. When you are done selecting the criteria for the new filter, click **Save**. The list of exams and/or exceptions is sorted based on the filter you created, and the filter name is added to the Folder List for future use or modification.

NOTE

If you add a new filter while a filter worklist is open, that page will be closed and you are returned to the parent folder.

Specifying the Columns for an Exam Worklist

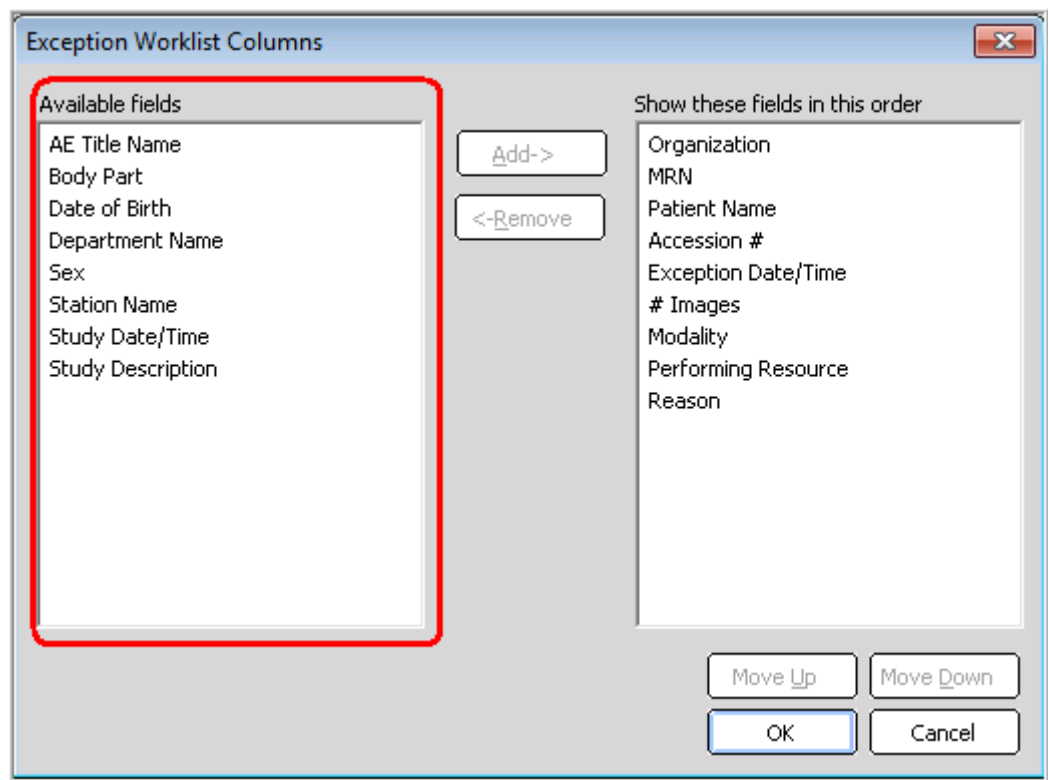
1. From the **Add Filter** dialog box, check **Exam Worklist**.
2. Click **Exam Worklist Columns**. The **Exam Worklist Columns** dialog box displays.



3. Optionally, do the following:
 - In the **Available fields** column, select the desired fields using **Ctrl-click** and then click **Add** to define the list of columns you want for the exam worklist. The names in the right column are the ones used in the worklist. Note that you cannot remove the columns for **MRN**, **Exam Date/Time**, **Accession #**, or **Modality**, as they are required columns.
 - Select a field in the right column and click **Move Up** or **Move Down** to rearrange the displayed columns.
 - Select an optional field in the right column and then click **Remove** to move it out of the right column.
4. When you are done, click **OK**. You are returned to the **Add Filter** dialog box.

Specifying the Columns for an Exceptions Worklist

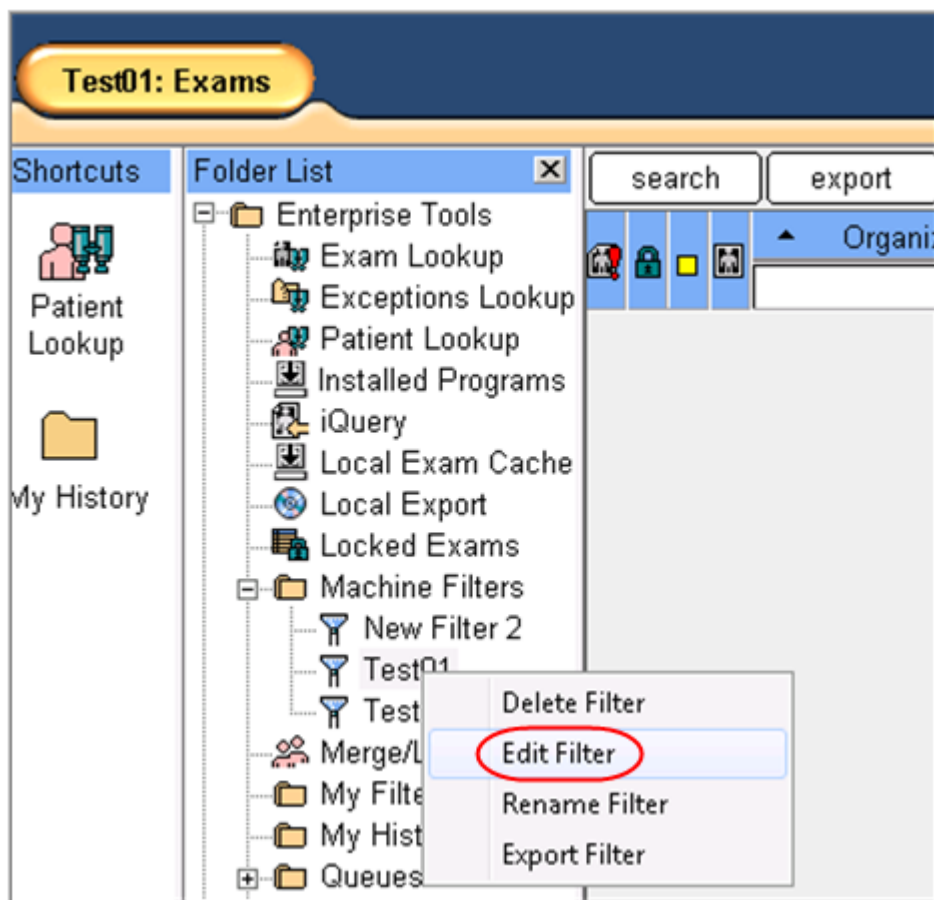
1. From the **Add Filter** dialog box, check **Exception Worklist**.
2. Click **Exception Worklist Columns**. The **Exception Worklist Columns** dialog box displays.



3. Optionally, do the following:
 - In the **Available fields** column, select the desired fields using **Ctrl-click** and then click **Add** to define the list of columns you want for the exception worklist. The names in the right column are the ones used in the worklist. Note that you cannot remove the columns for **MRN**, **Exception Date/Time**, **Accession #**, or **Modality**, as they are required columns.
 - Select a field in the right column and click **Move Up** or **Move Down** to rearrange the displayed columns.
 - Select an optional field in the right column and then click **Remove** to move it out of the right column.
4. When you are done, click **OK**. You are returned to the **Add Filter** dialog box.

Editing a Filter

1. In the Folder List, right-click the filter you want to edit and then click **Edit Filter**.

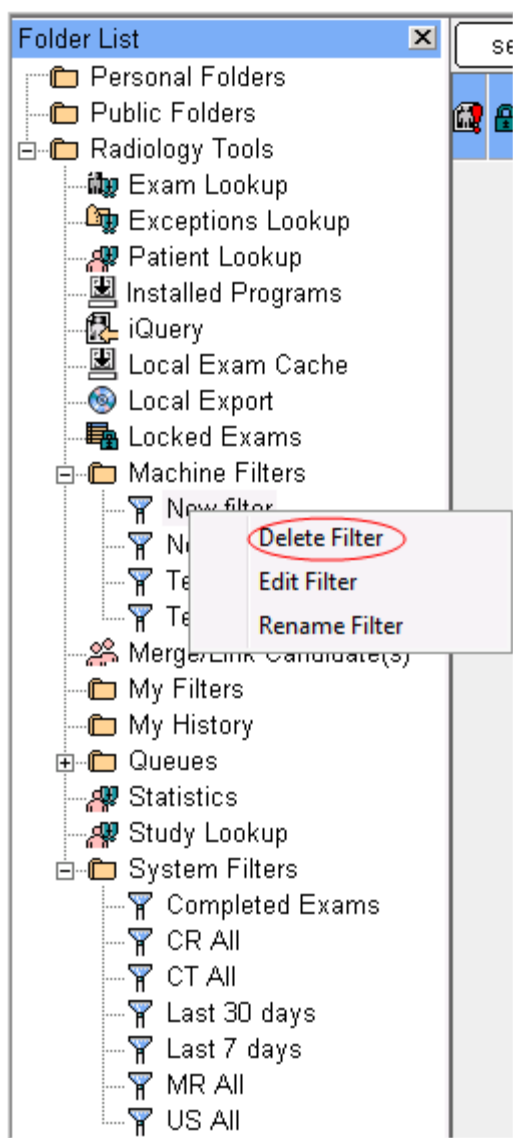


2. The **Add Filter** dialog box displays.
3. Make the desired edits to the fields in the **Add Filter** dialog box, including defining or rearranging exam or exception worklist columns by clicking **Exam Worklist Columns** or **Exception Worklist Columns**, respectively.
4. When you are finished editing the filter, click **Save**.

Deleting a Filter

If you have the proper privileges, you can delete filters from the Folder List.

1. To delete a filter from the Folder List, select the filter, right click, and select **Delete Filter**.



2. When asked “Are you sure you want to delete filter <FilterName>?”, click **Yes**. The filter is removed from the list.

Exporting a Worklist as a List

You can export a worklist as a comma-separated data file (CSV format). The worklist is exported as a text list, including the data in the columns as they are displayed in IntelliSpace PACS.

1. On the **Patient Lookup** page, select one of the filters from the **Shortcut Bar** or the **Folder List**.
2. The resulting worklist is displayed.
3. If required, specify additional criteria to further refine your search.
4. At the top of the worklist, click **Export**.

5. Browse to select the destination and enter the file name.
6. Click **OK**.

NOTE

The Worklist query results that can be exported is based on the value as specified in the "Worklist Query Result Limit" field in the iSite Administration console: Configure--> Client--> Global Client Configuration--> General. For example, if the value of "Worklist Query Result Limit" is set to 200, then only 200 results will be exported.

Sample Machine Filters for Technologists and Radiologists

Technologists and radiologists can create and use machine filters to customize IntelliSpace PACS for their needs.

Technologists can create machine filters based on the following criteria to allow them to link exams, create presentation states, create exam notes, and perform quality assurance:

- **Has Images** field set to **With Images**
- **Status** field set to **S - Scheduled, I - In Progress, and T - Taken**.
- **Mark Read** field set to **Unread exams**
- Include Exceptions by AE Title

Radiologists can create machine filters for reading based on the following criteria:

- **Has Images** field set to **With Images**
- **Status** field set to **C - Completed**
- **Mark Read** field set to **Unread exams**

NOTE

The "Machine Filters" are machine specific and can be accessed only in the machine(s) they are created, and cannot be accessed from other machine(s).

Commas Used as Delimiters in Filters

For the Ref. Phys. Name field, IntelliSpace PACS interprets search strings according to the following conventions:

- IntelliSpace PACS treats commas (,) as delimiters:
 - If the search string does not contain a comma, IntelliSpace PACS interprets the character string as the physician's Last Name.

- If the search string contains a comma, IntelliSpace PACS interprets any character string before the comma as the physician's Last Name, and any character string after the comma as the physician's First Name.
- IntelliSpace PACS ignores characters after any additional commas.
- IntelliSpace PACS treats percent characters (%) as wildcards:
 - If the search string does not contain a wildcard, IntelliSpace PACS searches for an exact match.
 - If the search string contains one or more wildcards, IntelliSpace PACS searches for results that contain the search string in the position indicated by the wildcard(s).

When you design your filters, keep in mind that search results also depend on how the Ref. Phys. Name data is stored in the IntelliSpace PACS database. If the referring physician's Last Name or First Name is stored in the database with extra characters, the filter may not return the results you expect from the search string you enter. For example, if the Last Name stored in the database is "Smith,M.D." you cannot find this physician by entering "Smith,M.D." as the search string in your filter; if you do, IntelliSpace PACS searches for a physician whose Last Name is "Smith" and whose First Name is "M.D." because IntelliSpace PACS interprets the comma in the search string as a delimiter between those two values.

11 Finding and Managing Exceptions

Exceptions Lookup Overview

You use the **Exceptions Lookup** to find and manage exceptions. Exceptions occur when there is a mismatch between the “gold copy” in the IntelliSpace PACS database and the modality metadata (information sent by the modality, sometimes called a “digital flashcard”), for example when:

- An MRN (medical record number) does not exist in IntelliSpace PACS
- An ACC (accession number) does not exist in IntelliSpace PACS
- The MRN and Accession # pair is invalid

When these situations occur, a provider cannot know with certainty the patient to whom the images belong. Because there is no way to automatically determine the correct patient, each exception must be reviewed and resolved before its associated images are linked with data from your HIS/RIS. Ideally, the technologist who created an exception resolves the problem immediately at the workstation. If the technologist does not resolve the exception, the exam is not available for interpretation.

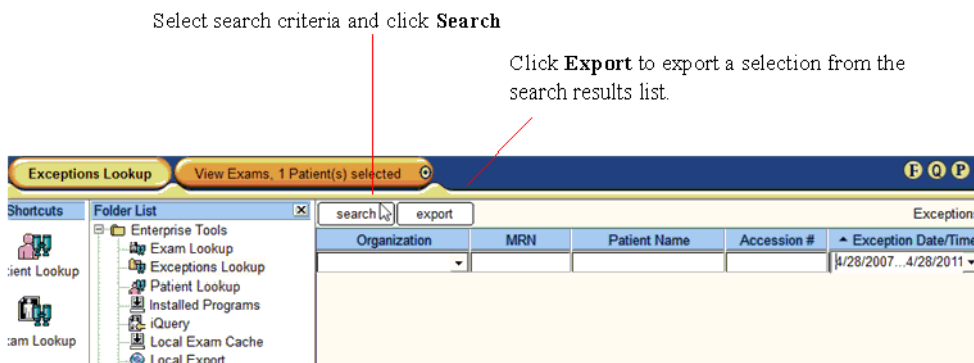


Fig. 24: Exceptions Lookup

You can use the **Exceptions Lookup** to quickly find exceptions based on a combination of search criteria. You can search for exceptions using any combination of the following criteria. The search criteria in bold below must be displayed at all times:

- Organization
- Body Part
- **MRN**
- **Patient Name**
- **Accession #**
- Date of Birth
- Study Date/Time
- **Exception Date/Time**

- Number of Images
- **Modality**
- Performing Resource
- Reason
- Department Name
- Station Name
- AE Title Name

Note the following about searching for exceptions:

- A date range is not required.
- Only exact matches for Accession # and MRN are supported.
- If you search by Accession # or MRN, the date range is ignored.
- The total number of exception studies matching your search criteria is displayed.
- If more exception studies match your criteria than can be displayed, a message displays in the Control Strip.

NOTE

The algorithm used to resolve exceptions uses the MRN and ACC#. Before resolving the exception, you should open the images in question in IntelliSpace PACS Radiology to verify matching of the patient demographics.

You use the **Exceptions Handler** to resolve exceptions. See [“Using the Exceptions Handler” on page 175](#). You use the **Resolved Exceptions** worklist to view a list of all resolved exceptions. See [“Working with Resolved Exceptions” on page 179](#).

Searching for Exceptions

1. Select **Exceptions Lookup** from the Folder List (or the Shortcut Bar list if you have created a shortcut for this feature).
2. Enter the desired search criteria. (Note that you cannot use **Patient Sex** or **# Images** as a search criteria.) You can use wildcard searches using patient name, MRN, or Accession # in the **Exceptions Lookup** (for example, an MRN of 1234 returns matching MRNs 123456 and 123498). To search for exceptions from all dates, select the Exception Date/Time value and press the Delete key.
3. Click **Search**. A list of exceptions that match your search criteria is displayed. The upper-right corner of the **Exceptions Lookup** also displays the total number of exceptions found. You can do the following:
 - Right-click to display a menu with actions.
 - Rearrange, re-size, and select certain search criteria columns to hide or display.

- **Shift-click** to select contiguous exceptions or **Ctrl-click** to select multiple, non-contiguous exceptions.

NOTE

Any exception opened from the exception worklist stays highlighted in the list after you have closed the exception, if the exception has not been resolved.

Searching for Exceptions by Patient Name

You can use patient names to search for exceptions by entering their last and first name or by using a wildcard search. For example, to find patient Doe, John you can search for the full name (Doe, John), full last name or partial first name (Doe, J) or partial last name (D). There is also a wildcard search option that allows you to search on a partial last name and “%” or partial or full first name (for example D%, Jo).

1. If it is not already displayed, select **Exception Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. Enter all or part of the patient's last or first name. To search for exceptions from all dates, select the **Exception Date/Time** value and press the **Delete** key.
3. Click **Search**. Exceptions for patients in the specified time or date range are displayed. The upper-right corner of the **Exceptions Lookup** also displays the total number of exceptions found. You can do the following:
 - Right-click to display a menu with actions.
 - Rearrange and select certain search criteria columns to hide or display.
 - **Shift-click** to select contiguous exceptions or **Ctrl-click** to select multiple, non-contiguous exceptions.

Searching for Exceptions by Exception Date/Time

You can specify a supplied date/time to search for exceptions, or specify a custom date range using a calendar control. Note that when you enter an Accession #, the date range you specify is not used in the search.

1. If it is not already displayed, select **Exception Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. In the **Date/Time** column, select an **Exception Date/Time** range from the list. Note that the time is when IntelliSpace PACS receives the images, not the time when the images were acquired.
 - **Note:** You can use the **Delete** key and search for all exceptions, regardless of date. You cannot type a date in this field or use **Ctrl-X** or **Backspace** to clear the field.
3. Click **Search** or press **Enter**. Patients with exceptions who match the name search criteria are displayed. The upper-right corner of the **Exceptions Lookup** also displays the total number of exceptions found. You can do the following:

- Right-click to display a menu with actions.
- Rearrange and select certain search criteria columns to hide or display.
- **Shift-click** to select contiguous exceptions or **Ctrl-click** to select multiple, non-contiguous exceptions.

Searching for Exceptions Using a Custom Date Range

1. If it is not already displayed, select **Exception Lookup** from the Folder List (or the Shortcut Bar if you have created a shortcut for this feature).
2. In the **Date/Time** column, select **Custom**. A **Start Date** and **End Date** window displays a range of Today's date for both start date and end date. If a **Custom** date is set to more than 7 days, the filter is not auto-refreshed every one minute.
3. Enter the desired start and end dates, or click the arrow for either date to enter the date using the calendar control.
4. Click **OK** when you have entered the desired dates.
5. Click **Search** or press **Enter**. Exceptions for patients in the specified date range are displayed. The upper-right corner of the **Exceptions Lookup** also displays the total number of exceptions found. You can do the following:
 - Right-click to display a menu with actions.
 - Rearrange and select certain search criteria columns to hide or display.
 - **Shift-click** to select contiguous exceptions or **Ctrl-click** to select multiple, non-contiguous exceptions.

Showing or Hiding Exception Lookup Columns

1. Right-click in the column area, above the list of exceptions. A menu displays, showing a check mark to the left of the active criteria type.
2. Select the columns you want to show or hide. Shown columns are checked; hidden columns are unchecked.
3. Repeat steps 1 and 2 as required.

Rearranging Exception Lookup Columns

You can click and drag **Exception Lookup** columns to rearrange their order. This allows you to customize in what order exception information is displayed.

- Press and drag a column to the position you want, and release the mouse button.

Sorting Results

By default, the selected sort column is set to display all exams on top. Clicking the column header in the exam or exception worklist sorts the contents of the worklist using the selected header as the primary sort column. Clicking the current sort column toggles the sort order between ascending and descending.

Exceptions are sorted by Exception Date/Time descending (with newest exceptions on top).

NOTE

You cannot sort the Sex, # Images, or Study Description columns.

Click the blue column heading that you want to sort by. An arrow appears in the column heading to display whether the order is ascending (A-Z or 1-9) or descending order (Z-A or 9-1). To reverse the order, click the same column heading again.

Exception Resolution Overview

Exceptions occur when there is a mismatch between the “gold copy” in the IntelliSpace PACS database and the modality metadata (information sent by the modality, sometimes called a “digital flashcard”). This can happen for a number of reasons, depending on configuration and external system behavior. It is critical that DICOM studies are associated with the proper patient and procedure, to avoid the presentation of images with the wrong patient. You use the **Exceptions Lookup** to find exception studies. See [“Exceptions Lookup Overview” on page 169](#).

If you have the correct access privileges, you can use the **Exceptions Handler** to resolve exceptions by associating received DICOM studies with patients and procedures in the system database. You can also delete exception studies if they cannot be resolved. See [“Deleting Exception Studies” on page 181](#).

When an exception occurs, the provider cannot know with certainty the patient to whom the images belong. Because there is no way to automatically determine the correct patient, each exception must be reviewed and resolved before the associated images are linked with data from your HIS/RIS. Typically, the Technologist who creates an exception resolves the problem immediately at their workstation. If the exception is not resolved, it is not available to be marked read for interpretation. Some common causes for exceptions are detailed in the following chart.

Common Causes for Exceptions

The technologist enters incorrect patient demographics, such as the wrong MRN or the Accession # is missing.	If this happens, IntelliSpace PACS cannot safely associate the study to the exam because the data was entered incorrectly. This problem is due to human error.
A DICOM study is received from a modality that is not receiving patient and order information from the HIS/RIS.	In this case, IntelliSpace PACS creates an exception if it cannot safely create a new patient, match an existing patient, or create a new procedure in the auto-create ORG (organization) of the sending modality.
A DICOM study is received from a 3rd-party archive and no matching patient record is found.	The only likely reason a study would come from a 3rd-party archive is as a prior for an unread procedure. In this case, IntelliSpace PACS creates an exception if the patient or order associated with the study cannot be identified.
A DICOM study is received before the exam information is received from the HIS/RIS.	In this case, when the IntelliSpace PACS receives the HIS/RIS feed, IntelliSpace PACS automatically resolves the exceptions to the newly received exam.
The original exam is canceled because the ordered exam is not correct.	The study becomes an exception and must be manually reconciled to the corrected exam.

When the images have been deleted, the **Resolve Exception** option is not available when you right-click on the exception. See [“Deleting Exams” on page 126](#) for more information about deleting exams.

Mismatch scenarios are categorized as one of the following:

- **Duplicate UID (DUP UID):** See [“Resolving Duplicate UIDs” on page 411](#).
- **ACC Not Entered:** The exam does not have an Accession #.
- **MRN Not Entered:** The exam does not have an MRN .
- **Accession # Not Found:** The Accession # associated with a study is not in the IntelliSpace PACS database. See [“Resolving Accession # Not Found Exceptions” on page 178](#).
- **MRN Not Found:** The MRN associated with a study is not in the IntelliSpace PACS database. See [“Resolving MRN Not Found Exceptions” on page 178](#).
- **Accession and MRN Mismatch:** Both the Accession # and MRN associated with a study are in the database, but they belong to different exams. See [“Resolving Accession and MRN Mismatch Exceptions” on page 179](#).
- **Accession # and MRN Not Found:** Both the Accession # and MRN associated with a study are not found in the database. See [“Resolving Accession and MRN Not Found Exceptions” on page 179](#).

- **System Errors:** Used for additional exception types. A single tab of potential matching exams is displayed in the **Exceptions Handler** for these exceptions.



WARNING

You need to know the following information to use the Exceptions Handler safely in a live clinical environment. If you do not understand any of these warnings or how they affect you, contact your IntelliSpace PACS System Administrator or Philips Customer Care.

- To avoid unauthorized access to imaging exceptions, do not leave a computer unattended while the Exceptions Handler is running. As a user of the Exceptions Handler, you assume responsibility for unauthorized access as long as you are logged in to the program. Before leaving a workstation, you should close the Exceptions Handler and log out of IntelliSpace PACS.
- When an exception is resolved, IntelliSpace PACS discards the original scanner information and replaces it with information from the HIS/RIS, resulting in a complete loss of scanner information. If an exception was resolved in error and the exception is later unresolved by unlinking the exam from the image (resulting in a user-created or manual exception), the window now displays the HIS/RIS information that replaced the scanner information when the exception was originally resolved. This makes resolving the exception difficult because the HIS/RIS information is no longer accurate for this exception. IntelliSpace PACS retains the HIS/RIS data because the original scanner information was discarded upon the initial resolution of the exception and there is no other data in the database to associate with the exception. Therefore, we strongly recommend that care be taken when resolving exceptions to avoid the loss of original image header information captured at the scanner.
- Please take care when resolving exceptions to exams that have already been dictated or marked read. Philips encourages customers to notify the responsible reading Radiologist of the exception images being added to the exam, because these images may not have been viewed at the time of dictation.

Using the Exceptions Handler

The **Exceptions Handler** is divided into two parts:

- The top part displays the exception reason and the images of the exception study with the associated data fields (**Accession #**, **MRN**, **Patient Name**, **Exam Date/Time**, **Modality**, and **Body Part**).
- The bottom part displays a list of potential exams and/or patients to match to the exception study. One or two tabbed lists display: **Exams that match Accession #** and **Exams that match MRN**. IntelliSpace PACS configures the search criteria for these lists. If there are images associated with the exam, you can double-click the item to view the images.

The following fields are shown under the images:

- Images icon, if the exam has images associated with it
- Accession #

- MRN
- Patient Name (Last Name, First Name, Middle Name)
- Modality
- Exam Date/Time
- Exam Code
- Organization
- Exam Description (based on Exam Code)
- A button or menu item to allow opening the Clinical Information dialog. This is not visible if the user does not have the rights to view it.

Optional fields:

- Body Part
- Subspecialty

Exception study images and data.

Potential exams and/or patients that match exception study

Tools to create patient and/or exam

Accession #	MRN	Patient Name	Modality	Study Date/Time	Organization
195662001 LCT	0000347450	SANTESOFT, DEMO	PR	10/24/2008 9:14:15	

Total Matches(1)		Matches on Accession(0)				
Accession #	MRN	Patient Name	Modality	Exam Date/Ti...	Exam Code	Organization
4BDA20B60001	004-29-000-4BD...		CT	4/29/2010 17:13:42		DEFAULT

NOTE

Refer to your local policy on creating new exams in IntelliSpace PACS before using the Create Patient and Exam feature. If you have HIS/RIS integration, patients and exams created in IntelliSpace PACS will not be synchronized with your HIS/RIS.



WARNING

Make sure you associate the exception study with the correct patient or exam.

1. Use the **Exception Lookup** to search for exception studies.
2. Select an exception that has images associated with it and right-click. From the menu, select **Resolve Exception**. The **Exceptions Handler** displays.
3. Review the top part of the **Exceptions Handler** to see the images of the exception study with the associated information. Suspect fields are highlighted.
4. If desired, click **Generate** to generate the Accession #. The accession number is generated based on the Prefix/Current Value settings configured for the noted organization in the IntelliSpace PACS AdminTool. The maximum length is 20 characters.
5. If desired, double-click an image to open an image popup window. Right-clicking in the popup window displays a menu with the following options:
 - **Window Width/Window Level:** See [“Setting the Window Width/Level” on page 259](#)
 - **Image Processing:** See [“Image Processing” on page 267](#)
 - **Play Cine:** Provides an option to activate the loop or bounce. Right-click the image again to stop it.
 - **Save:** Saves the image to the clipboard or a file.
 - **Zoom Presets:** Allows you to select a preset zoom factor of **Fit to Window, 100% (Original Size), True Size, 200%, 300%, or 400%**
 - **Zoom Presets:** Allows you to select a preset zoom factor of **Fit to Window, 100% (Original Size), True Size, 200%, 300%, or 400%**
6. Review the bottom part of the **Exceptions Handler** to see the potential exam matches that IntelliSpace PACS suggests, based on either Accession # or MRN. Use the open search fields to manually search for matching exams. If you enter an MRN or Accession #, IntelliSpace PACS disables the **Exam Date/Time** field, and therefore, the exam date/time criteria is excluded from your query. If you only search by MRN or Patient Name, patients without exams are displayed.
 - An Image icon displays to the left of the exam if there are images.
 - A Patient icon displays to the left of the name if the patient does not have any exams. You can create exams for patients without exams by selecting the name and clicking **Create Exam**.
 - A visual indicator is displayed for patients with exams. This indicator can be expanded or collapsed. Exams are grouped and displayed in descending order of the exam date and time.
 - If there is no value in the **Exam Date/Time** column, all other columns except **MRN, Accession#, Patient Name** and **Organization** are disabled and are not considered when performing the search.
7. Double-click on any item in a potential match to view the images associated with it. This displays a new tab in the bottom pane that displays the images, allowing you to compare the images in the top and bottom part of the **Exceptions Handler**. The **Accession #, MRN, Patient Name, Exam Date/Time, Modality, Organization, Body Part, Exam Description, and Exam Code** are displayed for the images.

8. If you cannot find a patient or exam to associate with the study, click **Create Patient and Exam**. See [“Creating a New Patient and Exam from the Exceptions Handler” on page 183](#). If you can find a patient, but not an exam, click **Create Exam**. See [“Creating a New Exam from the Exceptions Handler” on page 184](#).
9. When you have found a match, click **Resolve**. A message displays asking you to confirm the action.
10. Click **OK**. The exception is resolved and any image popup windows you opened are closed.

NOTE

Any exception opened from the exception worklist stays highlighted in the list after you have closed the exception, if the exception has not been resolved.

Resolving Accession # Not Found Exceptions

The mismatch scenario **Accession # Not Found** means that the Accession # of a study cannot be found in the IntelliSpace PACS database. To resolve this exception, you must search the IntelliSpace PACS database with the MRN that was attached to this study. The most likely exam is the one without images, though this is not always the case.

1. Use the **Exception Lookup** to search for exception studies.
2. Select an exception and right-click. From the menu, select **Resolve Exception**. The **Exceptions Handler** displays.
3. Select an item in the candidate list and click **Resolve**. IntelliSpace PACS replaces the study's current Accession # with the number you selected. If you search for and select a different exam from another patient, IntelliSpace PACS replaces both the Accession # and the MRN in the study with those from the selected exam.

Resolving MRN Not Found Exceptions

The mismatch scenario **MRN Not Found** means that the MRN of a study cannot be found in the IntelliSpace PACS database. To resolve this exception, you must search the IntelliSpace PACS database for an exam to match this study to. Usually, the most likely matching exam for this exception is the one with the same Accession # but with a different (but correct) MRN.

1. Use the **Exception Lookup** to search for exception studies.
2. Select an exception and right-click. From the menu, select **Resolve Exception**. The **Exceptions Handler** displays.
3. Select an item in the candidate list and click **Resolve**. IntelliSpace PACS replaces the study's current MRN with the number you selected. If you search for and select a different exam from another patient, IntelliSpace PACS replaces both the Accession # and the MRN in the study with those from the selected exam.

Resolving Accession and MRN Mismatch Exceptions

The mismatch scenario **Accession # and MRN Mismatch** means that both the Accession # and MRN exist in the IntelliSpace PACS database, but the exam indicated by the Accession # has a different MRN attached to it. To resolve this exception, you must find the correct exam to attach the study to. You can resolve this exception in one of two ways:

- Choose from a list of exams with an MRN that is the same as the one attached to the study, or search for an exam.
- Choose the exam with the same Accession # that is attached to the study.

Resolving Accession and MRN Not Found Exceptions

The mismatch scenario **Accession # and MRN Not Found** means that both the Accession # and MRN do not exist in the IntelliSpace PACS database. You can resolve this exception in one of two ways:

- Find a different exam for a different existing patient by entering search criteria and searching manually for an existing exam.
- Create a new patient and exam.

Working with Resolved Exceptions

The **Resolved Exceptions** worklist is an audit log of exceptions that have been resolved. This worklist gives Technologists and PACS Administrators a convenient way to view all resolved exceptions. Note the following:

- If an exception was deleted it would appear in the Resolved Exceptions worklist with Resolved to Acc# set to **Deleted**.
- If the exam that points to Resolved to Acc# was later deleted or detached, a message will display stating that the exam could not be opened.

Viewing Resolved Exceptions

You can use the **Resolved Exceptions** worklist to quickly find resolved exceptions based on a combination of search criteria. You can search for exceptions using any combination of the following criteria. The search criteria in bold below must be displayed at all times:

- Organization
- Body Part
- **MRN**
- **Name**
- **Accession Number**
- Sex
- DOB
- Study Date/Time

- **Exception Date/Time**
- # Images
- **Modality**
- Performing Resource
- Reason
- Department Name
- AE Title Name
- Study Description
- Station Name
- **Resolved By**
- **Resolved To ACC**
- **Resolved Date/Time**
- **Resolved Organization**

NOTE

Images field shows the sum of displayable images and non-displayable (for example, GSPS, Structured Report) objects.

1. Select **Resolved Exceptions** from the Folder List (or the Shortcut Bar list if you have created a shortcut for this feature).
2. Enter the desired search criteria. You can use wildcard searches using Patient Name and MRN in the **Resolved Exceptions** worklist (for example, an MRN of 1234 returns matching MRNs 123456 and 123498). To search for resolved exceptions from all dates, select the **Exception Date/Time** value and press the Delete key.
3. Click **Search**. A list of resolved exceptions that match your search criteria is displayed. The upper-right corner of the **Resolved Exceptions** worklist also displays the total number of resolved exceptions found. You can do the following:
 - Rearrange, re-size, and select certain search criteria columns to hide or display.
 - **Shift-click** to select contiguous exceptions or **Ctrl-click** to select multiple, non-contiguous exceptions.
4. If desired, open the exam to which the exception was resolved to view the study/images and verify resolution.

NOTE

A message displays if the exam has been deleted.

A message displays if the exam does not contain any images, if the study is detached, or if the user does not have rights to view the images.

If you double-click on a resolved exception that points to a deleted exception, no exam is opened and no message is displayed.

Exporting Resolved Exceptions

You can export the **Resolved Exceptions** worklist as a comma-separated data file (CSV format). The worklist is exported as a text list, including the data in the columns as they are displayed in IntelliSpace PACS.

1. Configure the **Resolved Exceptions** worklist to view the exceptions you wish to export.
2. Click **Export**.
3. From the **Save As** dialog box, navigate to the folder to which you want to export the CSV file.
4. Click **Save**.

Creating a Filter for Resolved Exceptions

You can create User or System filters for Resolved Exceptions. See [“Creating Filters” on page 158](#).

Deleting Exception Studies

You may occasionally need to delete exception studies, such as those for phantom studies that you can't resolve with confidence. You can do this only if you have been assigned the proper permissions. Deleting an exception study removes it from the **Exceptions Handler** and any worklist that shows exceptions. Note that images associated with exception studies you delete cannot be linked with data from IntelliSpace PACS.

**WARNING**

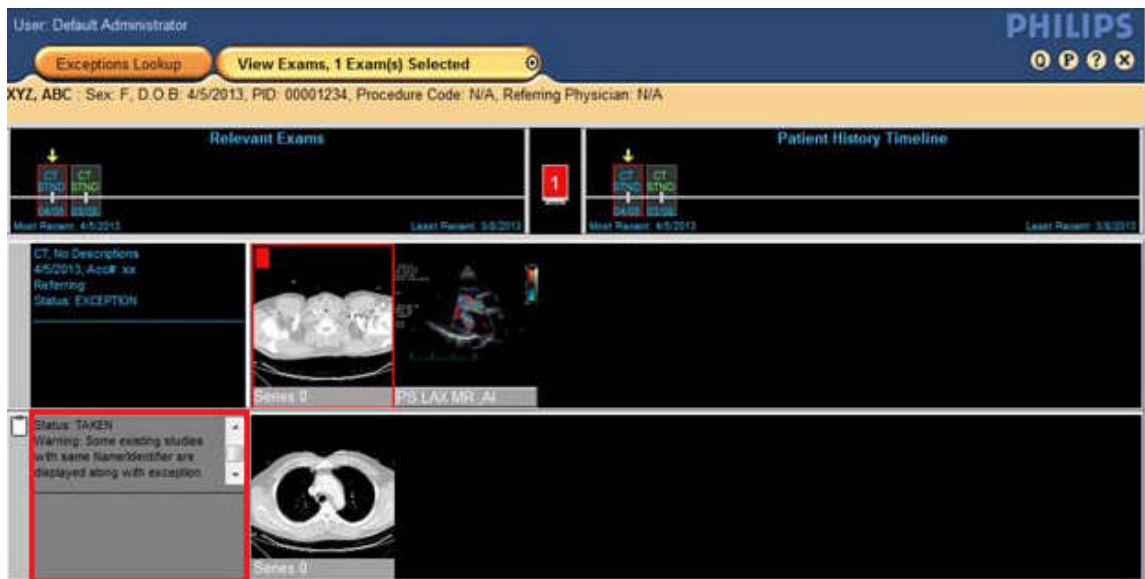
- Deleting an exception study is a potentially hazardous operation, and cannot be undone and images cannot be recovered. You should review the Warnings in this chapter to ensure that you understand the possible ramifications of deleting an exception study.
- Make sure that you understand that when you detach DICOM studies from an exam and delete the subsequent exception, you are, in fact, permanently deleting those studies. Deleted studies may contain data that would render a different diagnosis.

1. Use the **Exception Lookup** to search for exception studies.
2. Select an exception and right-click. From the menu, select **Delete Exception**. A message displays asking you to confirm the action.
3. Click **OK**. The study is deleted from the system and removed from the exceptions list. If IntelliSpace PACS receives the same images again from the modality, the study is not rejected or ignored, but instead treated as if it was being received for the first time.

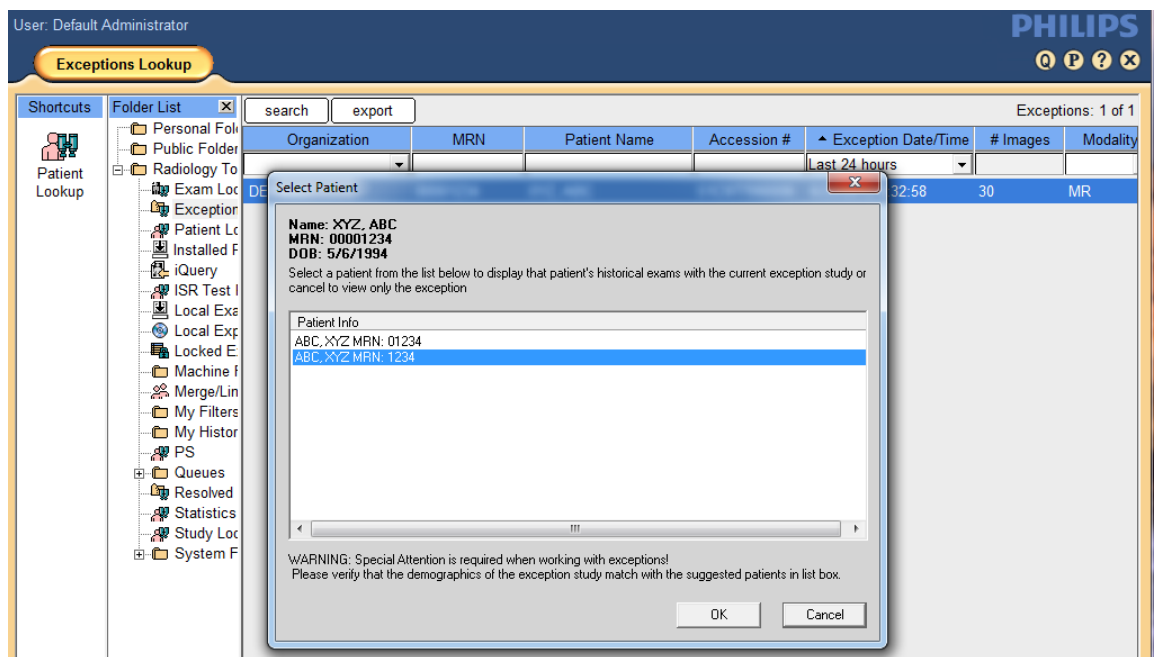
Soft Merge for Quick Review of Exceptions

When a physician opens an exception for a quick review before the exception is resolved to an exam, IntelliSpace PACS uses the MRN of the exception to query the database for any possible matches of the exception to existing patient exams.

If a single matching record is found with a matching patient first and last name, IntelliSpace PACS automatically displays the patient's historical images as part of the patient's timeline. However, the merged exam's study summary dialog has a gray background and displays "Warning: Some existing studies with same Name/Identifier are displayed along with exception study" as shown.



If more than one matching records are found, the Select Patient window displays a list of all matching patient records.



Creating a New Patient and Exam from the Exceptions Handler

If you cannot find a patient in the database to match the exception to, you can create both a patient and an exam to resolve the exception study.

NOTE

Refer to your local policy on creating new exams in IntelliSpace PACS before using the Create Patient and Exam feature. If you have HIS/RIS integration, patients and exams created in IntelliSpace PACS will not be synchronized in your HIS/RIS.

1. Use the **Exception Lookup** to search for exception studies.
2. Select an exception and right-click. From the menu, select **Resolve Exception**. The **Exceptions Handler** displays.
3. Review the top part of the **Exceptions Handler** to see the images of the exception study with the associated data fields. Suspect data fields are highlighted.
4. Review the bottom part of the **Exceptions Handler**. Click the **+** sign to expand the potential match list. This allows you to change column headers and/or change search criteria, and search again for potential matches. Double-click on any item in a potential match to view the images associated with it. This displays a new tab in the bottom pane that displays the

images, allowing you to compare the images in the top and bottom part of the **Exceptions Handler**. The **Accession #**, **MRN**, **Patient Name**, **Modality**, **Exam Date/Time**, **Exam Code**, and **Organization** are displayed for the images.

5. If you cannot find a patient or exam to associate with the study, click **Create Patient and Exam**. The **Create Patient and Exam** dialog box displays with the **Patient Info** pane displayed. The patient must have exams to use this feature.
6. Select the **Organization** from the list.
7. Enter the **MRN** number and information on the patient.
8. Click **Exam Info**. The Organization you selected in the **Patient Info** pane is displayed and cannot be changed.
9. Enter the exam information.
10. When you are done, click **Save**. You return to the **Exceptions Handler**.
11. Click **Resolve**. A message displays asking you to confirm the action.
12. Click **OK**. The exception is resolved.

Creating a New Exam from the Exceptions Handler

If you can find a patient, but cannot find an exam to resolve the exception, you can create an exam for the exception study from the **Exceptions Handler**. For example, in a trauma case, the images would be exceptions if the patient name was unknown and the exams were done in the Emergency Room. Later, you could search for the patient in the database. If the patient name is in the database, you can create an exam for the exception study.

NOTE

Refer to your local policy on creating new exam in IntelliSpace PACS before using the Create Exam feature. If you have HIS/RIS integration, exams created in IntelliSpace PACS will not be synchronized in your HIS/RIS.

1. Use the **Exception Lookup** to search for exception studies.
2. Select an exception and right-click. From the menu, select **Resolve Exception**. The **Exceptions Handler** displays.
3. Review the top part of the **Exceptions Handler** to see the images of the exception study with the associated data fields. Suspect data fields are highlighted.
4. Review the bottom part of the **Exceptions Handler**. Click the + sign to expand the potential match list. This allows you to change search criteria and search again for potential matches.

5. Double-click on any item in a potential match to view the images associated with it. This displays a new tab in the bottom pane that displays the images, allowing you to compare the images in the top and bottom part of the **Exceptions Handler**. The **Accession #**, **MRN**, **Patient Name**, **Modality**, **Exam Date/Time**, **Exam Code**, and **Organization** are displayed for the images.
6. If you can find a patient, but not an exam, click **Create Exam**. The **Create Exam** dialog box displays with the **Exam Info** pane displayed.
7. From the **Exam Priority** list, select the priority of the exam.
8. Enter the **Accession #** for the exam. This field is mandatory.
9. Enter the **Scheduled Date**. Click the arrow to display a calendar control.
10. Enter the **Exam Code**, or click the button to search for and select an exam code from the **Exam Code Dictionary**.
11. Enter the **Exam Code Modifier**, or click the button to search for and select one from the **Exam Code Modifier Dictionary**.
12. Enter the **Performing Resource** or click the button to search for and select one from the **Performing Resource Dictionary**.
13. Enter the **Ordering Location** for the exam, or click the button to search for and select one from the **Ordering Location Dictionary**.
14. If desired, enter information in the **Providers** and **Exam History** panes. See [“Entering Provider Information When Creating Exams” on page 185](#) or [“Entering Exam History Information When Creating Exams” on page 185](#).
15. When you are done, click **Save**. You return to the **Exceptions Handler**.
16. Click **Resolve**. A message displays asking you to confirm the action.
17. Click **OK**. The exception is resolved.

Entering Provider Information When Creating Exams

1. In the **Create Exam** dialog box, click **Providers**.
2. Enter the name of the **Referring Physician**, or click the button to search for and select a referring physician from the **Providers Dictionary**. When you select a provider, the available contact and address information is displayed.
3. Click **Exam History** if you want to enter exam history information.
4. When you are done, click **Save**. You return to the **Exceptions Handler**.
5. Click **Resolve**. A message displays asking you to confirm the action.
6. Click **OK**. The exception is resolved.

Entering Exam History Information When Creating Exams

1. In the **Create Exam** dialog box, click **Exam History**.
2. Enter information on the **Signs and Symptoms** for the exam.
3. Enter information about the **History** for the exam.

4. Enter additional **Comments** about the exam.
5. When you are done, click **Save**. You return to the **Exceptions Handler**.
6. Click **Resolve**. A message displays asking you to confirm the action.
7. Click **OK**. The exception is resolved.

Hiding and Closing the Clinical Info Dialog

You can change to a different tab or close the Exception Handler dialog, in which case the exam will not be displayed anymore.

When the exam associated with the currently opened Clinical Info becomes invisible, the Clinical Info dialog is hidden. The Clinical Info dialog becomes visible again when you switch back to the same exam display.

When you close the Exception Handler dialog, the Clinical Info dialog is closed as well.

12 Using the Canvas Page

Introduction to the Canvas Page

The Canvas Page displays patient exams and provides quick access to diagnostic images and series, diagnostic reports and exam notes, patient information, and diagnostic reading workflow. You use the Canvas Page to get contextual, historical information about the patient and select the images and series that you want to display on your diagnostic monitors.

NOTE

The Canvas Page is designed to be a navigational tool, not a tool for diagnostic reading. All diagnostic reading should be done on diagnostic monitors.

When you open an unread exam, it becomes locked for your use to prevent it from being opened and read by another user.

On the Canvas Page, exams are displayed in Exam Racks that run horizontally or vertically. Exams are displayed in chronological order, in descending order from most recent at the top to least recent at the bottom. If you have set a preference for the Canvas Page to display exams vertically, the most recent are displayed on the left. You can set various preferences for the Canvas Page. See [“Setting Canvas Page Preferences” on page 465](#).

You can reposition an image by selecting its information bar, dragging and dropping it to the desired location. Each exam has its own horizontal scrollbar that you can use to pan through the images and series in that exam. You can use the vertical scrollbar at the right side of the screen to view the selected exams if there are more than can fit on the screen.



WARNING

- **Make sure you label the left and right sides of an image correctly to prevent incorrect patient orientation and the possibility of misdiagnosis.**
- **Make sure you follow industry best practices for correct patient orientation.**
- **Make sure the images were acquired correctly at the modality before using them for diagnosis.**
- **Make sure you validate third party software to ensure that it is using the correct information from the outside source. In addition, proper validation of third party software must be done to ensure that it is using standard DICOM tags. Images that are submitted with a different pixel spacing tag than what IntelliSpace PACS uses (0018,1164) to perform measurements on projection radiography images could lead to incorrect measurement readings, thus leading to misdiagnosis and treatment planning.**

The IntelliSpace PACS Radiology Canvas Page displays the following. You can set various preferences for the Canvas Page. See [“Setting Canvas Page Preferences”](#) on page 465.

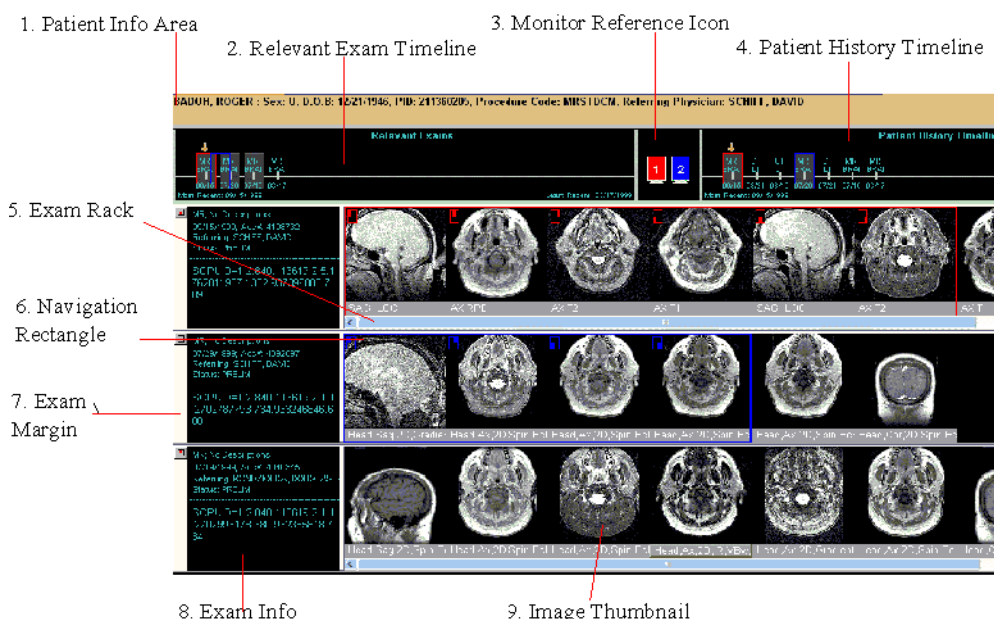
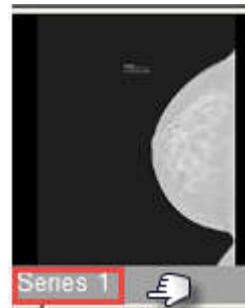


Fig. 25: IntelliSpace PACS Radiology Canvas Page

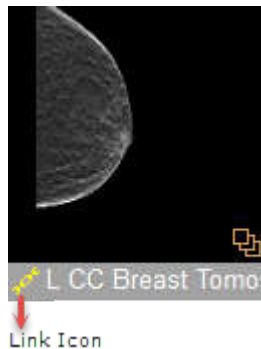
- 1. Patient Info Area:** Displays relevant patient information, including the patient's name, date of birth, sex, ID number, procedure code, referring physician and visit location. It also displays a Patient Class entry, which designates the type of patient, typically Inpatient (I), Outpatient (O), Emergency (E), and so forth. It may also display information from the exam notes of the main exam. If your institution's HIS/RIS provides admitting diagnosis information, it is also displayed. The patient info area will auto expand based on the patient's data size. The user can view five lines of the patient's data at a time without scrolling. Beyond five lines of data, a scroll bar will appear to assist in viewing the data.
- 2. Relevant Exam Timeline:** Displays a chronologically ordered representation of all relevant exams based on matching body part or body part and modality type related to the main opened exam for this patient. See [“Using the Relevant Exams Timeline”](#) on page 190.
- 3. Monitor Reference Icon:** Displays a representation of the diagnostic monitors connected to your IntelliSpace PACS Radiology workstation. The icons are numbered and in different colors. The color of the Diagnostic Monitor Icons corresponds to the navigational rectangles (displaying the same colors). You can right-click these icons to split the diagnostic monitors.
- 4. Patient History Timeline:** Displays a chronological listing of all of the patient's exams on the IntelliSpace PACS server. See [“Using the Relevant Exams Timeline”](#) on page 190.
- 5. Exam Rack:** Displays and lets you arrange exams for diagnostic review on your diagnostic monitors. Also gives a quick contextual view of the exam you are reviewing and the patient's other relevant exams. The Exam rack also displays the following information in the meta area:
 - The series description if present in the DICOM:



- If series description is not present, then the series number will be displayed:



- In addition, if image/series are linked, the meta area will show the link status icon along with link identifier:



6. **Navigation Rectangles:** Interactive, resizable rectangles that correspond to the images being displayed on your diagnostic monitors. These rectangles provide a visual representation of the exams being displayed, and can also be used to load other images, series, or exams into your diagnostic monitor. See [“Using the Navigation Rectangles” on page 199](#).
7. **Exam Margin:** Displays icons relevant to the exam, such as a **Report** icon if there is a diagnostic report for the exam. Right-clicking in the Exam Margin displays a menu with various options. See [“Using the Exam Margin” on page 197](#).
8. **Exam Info:** Displays information about the exam, including modality, body part, date of acquisition, accession number, referring physician, reason for study, and status. When available, the “Impressions” portion of the report is displayed under the exam information. The **Mark Read** button is displayed for unread exams. You can click this button when the diagnostic read of the exam is complete. See [“Displaying Exam Information” on page 198](#) and [“Marking an Exam as Read” on page 223](#).

9. **Image Thumbnail:** Displays thumbnail diagnostic images and/or image series of an exam. Each image or image series has an information bar below it. Double-clicking a thumbnail image or series opens an enlarged image popup window. Right-clicking a thumbnail image displays a menu with various options. See [“Using Thumbnail Images” on page 201](#). To rearrange the thumbnails, click on the gray bar at the bottom of a thumbnail and drag it to a new position on the Exam Rack.

If the relevant System Preference is set, an asterisk at the bottom of a thumbnail indicates that none of the images represented by the thumbnail have been displayed (excluded are thumbnails that represent collections, key images, captured images, or clones). See [“Setting Ensure All Viewed Preference” on page 504](#). The asterisk is only shown on an unread selected exam (so not on a prior exam, and not on a read exam).

10. **Rating:** Depending on your workflow, one of the following is applicable:
 - Screening: If the exam is unread, the buttons, **Positive**, **Negative**, and **Undecided** are displayed. Click one of the buttons or use the keypad to mark the exam as read. See [“Rating for Double-Blind Read” on page 434](#).
 - Diagnosis: If the exam is unread, the **Mark Read** button is displayed. Click **Mark Read** or press **F3** to mark the exam as read. See [“Marking an Exam as Read” on page 223](#).

Using the Relevant Exams Timeline

The IntelliSpace PACS Radiology Canvas Page displays two timelines: Relevant Exams, and Patient History Timeline.

The Relevant Exams timeline displays a chronologically ordered representation of all relevant exams based on matching body part or body part and modality type related to the main opened exam for this patient. For example, if you have chosen to review a CT Brain exam, the Relevant Exams timeline contains other

Brain exams that are related to the exam you are viewing. Preference for defining Relevant Exam Timeline can be set in the Hanging Protocol. See the chapter [“Using Hanging Protocols” on page 365](#).

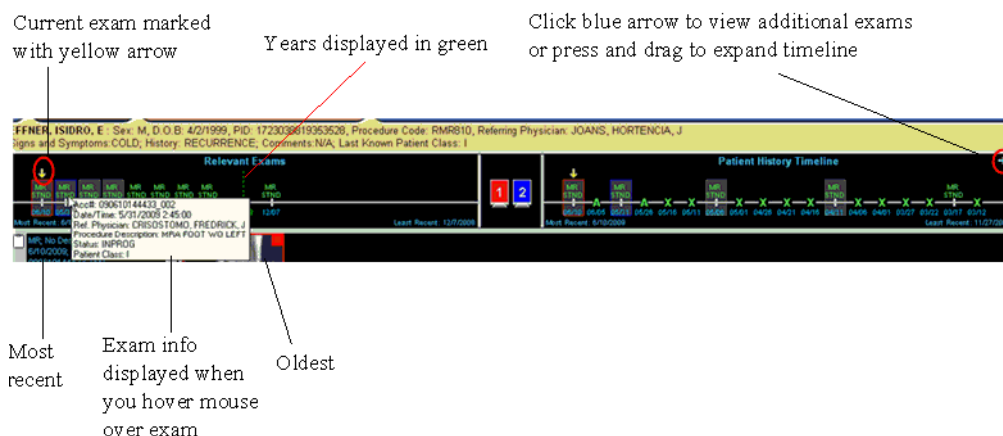


Fig. 26: IntelliSpace PACS Radiology timelines

Using the Patient History Timeline

The **Patient History Timeline** is a fast and intuitive way to view and navigate through a patient's clinical history of diagnostic exams and reports. Exams on the IntelliSpace PACS server are listed chronologically, with the most recent exam dates displayed on the left and the older exam dates displayed on the right.



Fig. 27: IntelliSpace PACS Radiology Patient History Timeline

For each exam, there is an icon (small square box) displayed in the timeline that displays, from top to bottom:

- Modality type
- First four characters of the body part (from the dictionary)
- Either a straight line, an "A" or an "X." A straight line indicates that there are images and the exam status is Scheduled, or the conditions for displaying an "A" have not been met. An "A" indicates that the exam may exist on a separate archive. An "X" indicates that an exam exists but images are not available. Blue text indicates that a report should be available.
- Date (month/day)

If you click on an exam in the Patient History Timeline that displays an "X" and does not have a Scheduled status, the **iQuery** dialog box displays under the following conditions to initiate a DICOM query from another DICOM device:

- iQuery is configured
- You have the proper privileges to run iQuery
- There is at least one DICOM QRP Source configured.

Otherwise, the exam does not load and no action is performed when you click on the exam in the timeline.

Exams that are present in your institution's archive but are not loaded on the IntelliSpace PACS Server are displayed with an "A" under the following conditions:

- The exam date and time is older than 48 hours
- The system preference **Allow DICOM Query to Display in Timeline** is enabled
- iQuery has been configured with at least one DICOM QRP source
- The IntelliSpace PACS user has iQuery access privileges
- The exam has no images and the exam status is neither Scheduled nor Non-Reportable.

Left-clicking on an exam in the Patient History Timeline displays that exam in the Exam Rack. Right-clicking on an exam in the Patient History Timeline displays a menu with the following options, depending on the exam:

- **Open/Close Exam:** See “Opening or Closing an Exam” on page 196
- **Add Exam to Folder:** See “Adding Exams to Folders” on page 73
- **Show Report:** See “Displaying and Printing the Current Report” on page 148
- **View Exam Notes:** See “Viewing Exam Notes” on page 140
- **Export via DICOM:** See “iExport for DICOM Export” on page 348
- **Cache Exam:** See “Local Exam Caching” on page 130
- **Show pop-ups of this screen:** See “Show/Hide Pop-up Windows” on page 207
- **Show pop-ups of all exams:** “Show/Hide Pop-up Windows” on page 207

Federation and the Patient History Timeline

When viewing the Patient History Timeline, there are some differences when remote (Federation) exams are displayed.

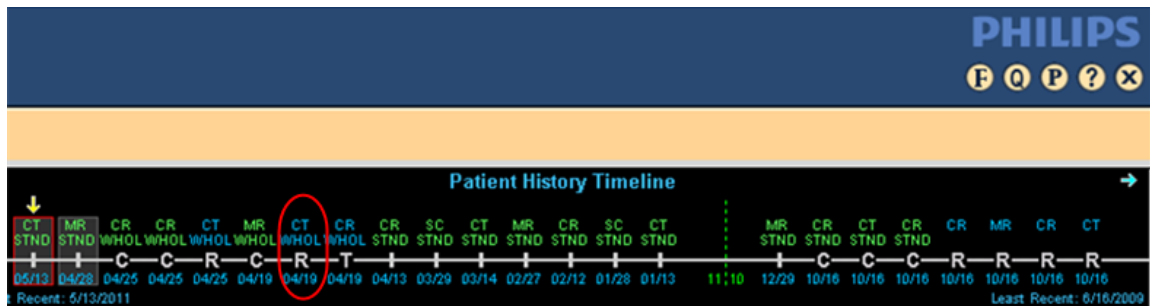


Fig. 28: View of the Patient History Timeline with remote exams displayed

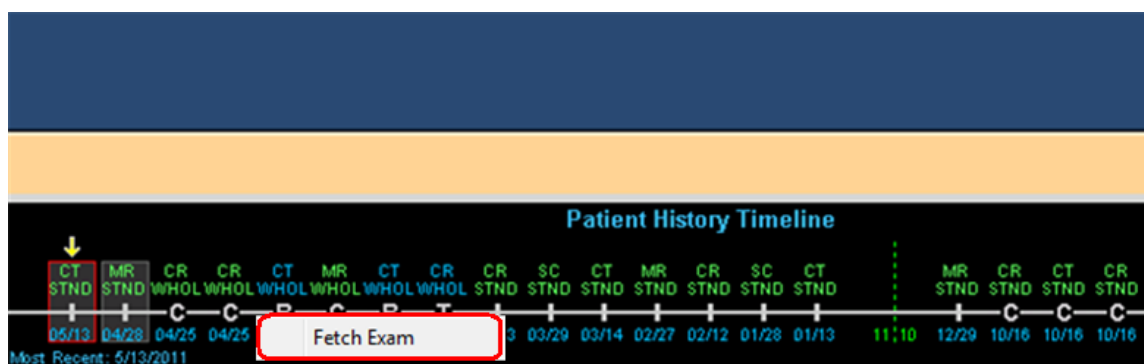
Remote exams are displayed on the timeline with an initial C, R, or T below the exam. These initials specify the state the exam is in as follows:

- **C:** the remote exam is already cached locally
- **R:** a remote exam has been identified in the federation
- **T:** exam is in the process of being transferred from the federation to the local cache

In addition, when the **F** icon in the Control Strip is amber (one or more remote locations missing), an **X** appears in the far right of the Patient History Timeline to indicate that the timeline may be incomplete because one or more remote locations are missing.

If an exam is present local (either cached locally or in a local PACS), the modality and body part displays on the timeline as green, while remote exams that are either still remote or are in the process of transferring display as blue on the timeline.

If you right-click a remote exam (displaying the **R** marker) on the Patient History Timeline, Fetch Exams displays.



Click **Fetch Exams** and the transfer process for the remote exam begins, displaying the **T** marker in the timeline, as the exam is being transferred. Once the exam has transferred and has been cached locally (displays the **C** marker in the timeline), you can click the exam and open it in the Canvas Page.

In addition, a new icon displays in the exam margin to show that the remote exam is cached, and the exam information text and background color is changed (dark blue and gray, respectively).

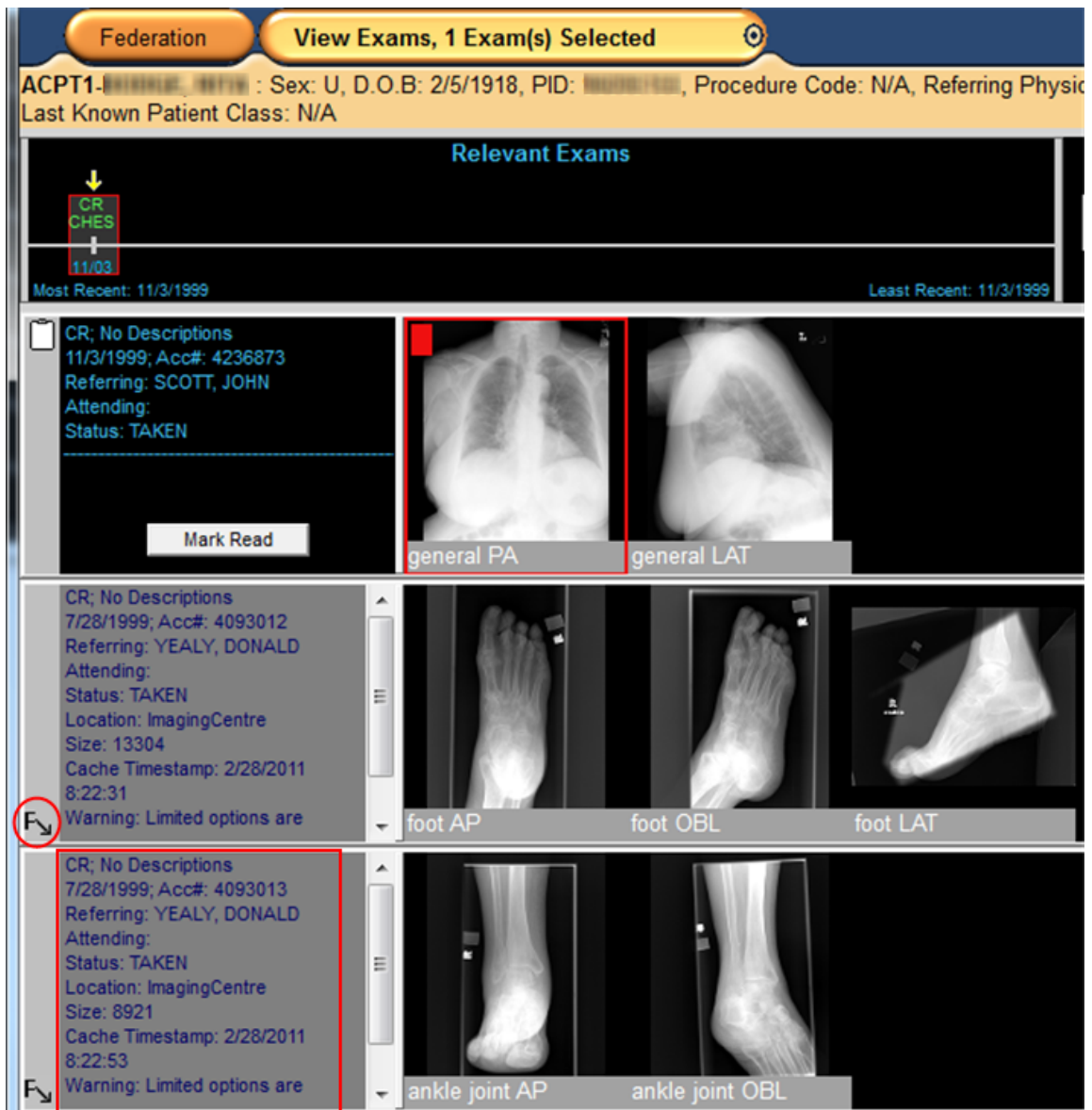
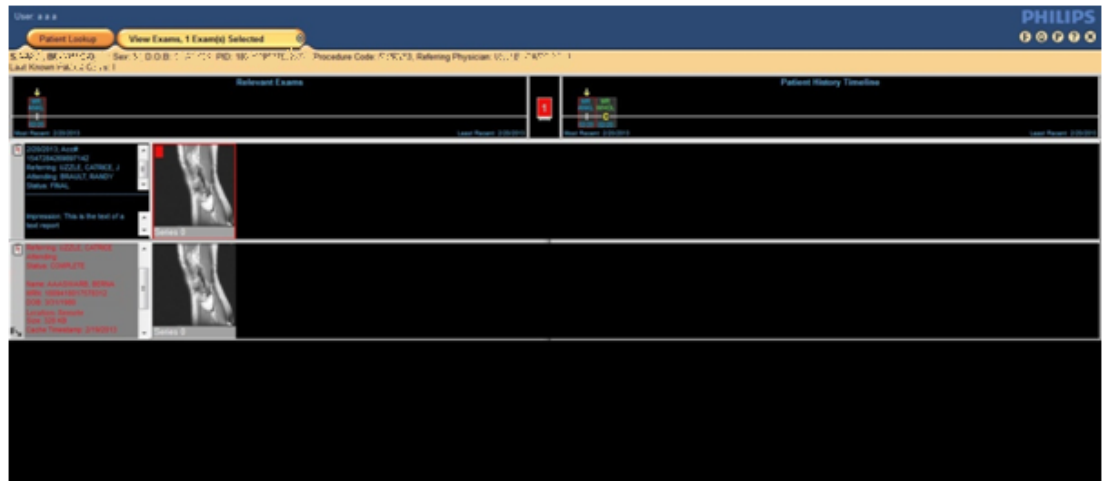


Fig. 29: View of Exam Margin showing remote exam icon (circled) and the changed exam information text and background

Besides the different colors of the text and background, there are other changes for cached exams:

- The exam information summary displays the name of the remote location; the size of the exam (in KB); the timestamp of the cached exam; attributes Patient Name, DOB, and MRN at the remote site; and also a warning, "Limited options are available for remote exams."
- You have limited access to the HL7 information displayed in the exam information summary.
- Cached exams can only be opened as a prior and not opened as a main exam, which means they cannot be marked read.

- You cannot view the Clinical Information dialog for cached exams, so you cannot view the Exam notes for a cached exam.
- Diagnostic reports for remote/cached exams show only the text of the report, and not the other tabs normally displayed in the Clinical Information dialog.
- You cannot create a conference presentation state for the main exam while the cached exam is open.
- Right-click options for a cached exam are limited. You can load an existing presentation state, but you cannot
 - create/edit/save a new presentation state
 - assign a new SUID
- Right click on Cached Exams in Patient TimeLine to show menu item Export via DICOM. On selecting this menu item, exams can be exported.
- If the local Patient demographics are different from the cached exam demographics, the text is displayed in red.



- You can delete cached remote exams by right-clicking on the patient exam from the Worklist and selecting **Delete Exam** from the context menu.

Accessing Exams that are not on the IntelliSpace PACS Server

- Double-click an exam with an “A” in the timeline. IntelliSpace PACS queries the available archives to retrieve the exam in question. An empty exam rack loads in the Canvas Page while the exam is being retrieved. The **Modality**, **Accession Number**, **Referring Physician**, and **Status** are displayed, as well as an estimate of how much time remains before the exam is retrieved and a display of the images being requested. Click **Cancel** to stop the archive retrieval.

Opening or Closing an Exam

You can have up to 30 exams open at a time. If IntelliSpace PACS cannot open an exam because of low memory usage, a message is displayed indicating that the exam cannot be opened. Also, if an exam in a prior Exam Rack cannot open because of low memory, a memory error is displayed on the Exam Rack with a **Retry/Close** button. This allows you to either close the Exam Rack or try opening the prior again after closing some other exams to free some memory.

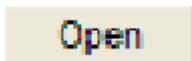
- Either left-click on an exam in the timeline, or right-click on an exam in the timeline and select **Open Exam** from the menu. If an exam is already loaded into the Exam Rack and you want to unload it, right-click on the exam in the timeline and from the menu, select **Close Exam**.

NOTE

If an exam cannot open because of low memory and no other exams are open, an unexpected low memory error is displayed. It is highly recommended that after you click OK to close the message, you should restart the IntelliSpace PACS client. The results of future actions will be unpredictable and crashes may occur if the client is not restarted.

Opening Another Unread Exam

You can quickly switch to any unread exams of the patient that are in the current filter worklist. To do so, click **Open** on the Exam Info part of the Canvas Page.



Ordering of Images in the Exam Rack

Note how the following conditions affect how images are ordered in the Exam Rack:

- When an exam is opened from the worklist and there is only a raw DICOM presentation state associated with the exam, the images on the Exam Rack are ordered based on the order of the series listed on the third page of the Hanging Protocol wizard. See [“Setting Monitor Options” on page 373](#). If Series Matching Rules are not being used, the Exam Rack order is based on the Original DICOM presentation state.
- When an exam is opened from the worklist and there is a presentation state that will be loaded, the order of the images on the Exam Rack is based on the order defined by the presentation state.
- When Series Matching Rules are applied and there are multiple image windows that match a rule and do not match any other rule in the hanging protocol, only the first image window is placed on the Exam Rack and the remaining images are placed at the end of the Exam Rack. This also means that the series specific applications (WWL, Invert Image, Don't Auto Hang, and so on) are only applied to the first matching image window.

Using the Exam Margin

The Exam Margin displays icons relevant to the exam, such as a **Report** icon if there is a diagnostic report for the exam. In addition, an icon now displays in the Exam Margin when new images have been added to a study loaded onto that Exam Rack. Hovering over the icon displays the tooltip "New images or other DICOM was received for this exam and has been loaded."

Icons in the Exam Margin indicate the following:

Icon	Description
	A diagnostic report is available
	An exam note is available
	A critical exam note is available
	Not all images for this exam may be available. Also displayed if new images are received by IntelliSpace PACS after a Mark Read presentation state has been created.
	New images have arrived. This icon is not displayed for exams that have been marked Read.
	This study has been cached from a remote site
	A presentation state has been loaded
	Add a comment for an anonymous exam (similar to an exam note). This icon displays only if the anonymized exam is opened from an anonymized personal folder.
	Indicates that the GSPS has loaded successfully/ Indicates that GSPS has partially loaded.
	Indicates that the GSPS has not loaded successfully.
	Indicates that the studies contain a SOP instance that cannot be displayed. See the <i>IntelliSpace PACS DICOM Conformance Statement</i> for information on the SOP classes that are for storage only (no display) and those that are for storage and display.

Right-clicking in the Exam Margin displays a menu with the following options:

- **Presentation States:** See [“Using Presentation States” on page 226](#)

- **CADSR:** See [“Working with CAD Markers”](#) on page 244
- **Recover Deleted Image(s):** See [“Recovering Deleted Images”](#) on page 418
- **Edit HP Sequence:** See [“Editing a User or System Hanging Protocol Sequence”](#) on page 408
- **Create User HP Sequence:** See [“Adding a User or System Hanging Protocol Sequence”](#) on page 407
- **Create System HP Sequence:** See [“Editing a User or System Hanging Protocol Sequence”](#) on page 408
- **Select User HP Sequence:** See [“Selecting a User or System Hanging Protocol Sequence”](#) on page 408
- **Select System HP Sequence:** See [“Selecting a User or System Hanging Protocol Sequence”](#) on page 408
- **Edit HP:** See [“Editing a Hanging Protocol”](#) on page 395
- **Create User HP:** See [“Configuring Hanging Protocols”](#) on page 368
- **Create System HP:** See [“Configuring Hanging Protocols”](#) on page 368
- **Select User HP:** See [“Selecting Hanging Protocols”](#) on page 395
- **Select System HP:** See [“Selecting Hanging Protocols”](#) on page 395
- **Rehang:** See [“Reverting to the Original Presentation of the Hanging Protocol”](#) on page 396
- **Add Exam to Folder:** See [“Adding Exams to Folders”](#) on page 73
- **Exam Information:** See [“Displaying Exam Information”](#) on page 198
- **Export via DICOM:** See [“iExport for DICOM Export”](#) on page 348
- **Horizontal/Vertical Rack:** See [“Configuring Horizontal or Vertical Racks”](#) on page 198
- **Exam View:** See [“Philips IntelliSpace Clinical Applications”](#) on page 329

Configuring Horizontal or Vertical Racks

You set whether Exam Racks are initially displayed horizontally or vertically in the User preferences. See [“Setting General Preferences”](#) on page 446.

- Right-click in the Exam Margin and from the menu, select **Horizontal Rack** or **Vertical Rack**.

Displaying Exam Information

1. Right-click in the Exam Margin and from the menu, select **Exam Information**. The **Exam Information** dialog box displays and displays HIS/RIS and DICOM metadata about the selected exam.
2. Review the information and click **OK**. You return to the Canvas Page.
3. If the exam is unread, the **Mark Read** button is displayed. Click **Mark Read** or press **F3** to mark the exam as read. See [“Marking an Exam as Read”](#) on page 223.

Using the Navigation Rectangles

The navigation rectangles provide interactive flexibility when hanging exams on your diagnostic monitors. By moving the rectangles or placing images and series within them, you can quickly rehang exams in your diagnostic monitors.

The size of the navigation rectangles is determined by the layout of your diagnostic monitors. For example, if you have chosen to lay out your diagnostic monitor with a M3H configuration, the navigation rectangle will be three images or series in length.

The navigation rectangle has been designed to “snap” into place, meaning that when you approach the final destination to which you are moving the navigation rectangle, it snaps into place. Once the navigation rectangle has been placed, the diagnostic monitor reloads with the new images, series, or exam.

NOTE

When you drag a navigation rectangle from one exam to another, if the hanging protocol dictates a different monitor setup, the navigation rectangle changes size to accommodate it. To quickly swap the contents of your monitors, you can drag one of the monitors onto the first image or series and the navigation rectangles will swap places. For information on hanging protocols, see [“Configuring Hanging Protocols” on page 368](#).

Each navigation rectangle contains one or more layout icons. These icons, located in the upper left corner of each image or series in a rectangle, represent the position of that particular image or series on your diagnostic monitor. The layout icons change dynamically when you change the layout of your diagnostic monitor.

You can drag images and series into the navigation rectangle, or drag the navigation rectangle itself over the images or series you want to display in your diagnostic monitors.

- To change the layout of the diagnostic monitors, right-click the navigation rectangle icon. A menu displays a list of possible monitor layouts and also includes an option to hide the navigation rectangle. Select the desired option.

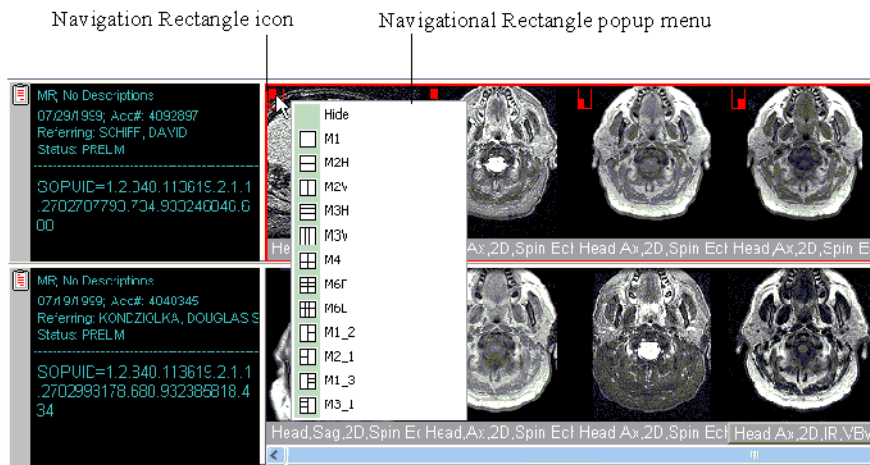


Fig. 30: Navigational Rectangle icon and menu

The Navigation Rectangles also provide a contextual view of the images or series being displayed on your Diagnostic Monitors. As seen in the images below, the “Zoom Rectangle” (the smaller rectangle superimposed on images and series) gives a contextual view of the diagnostic monitor display in relation to the image as a whole.

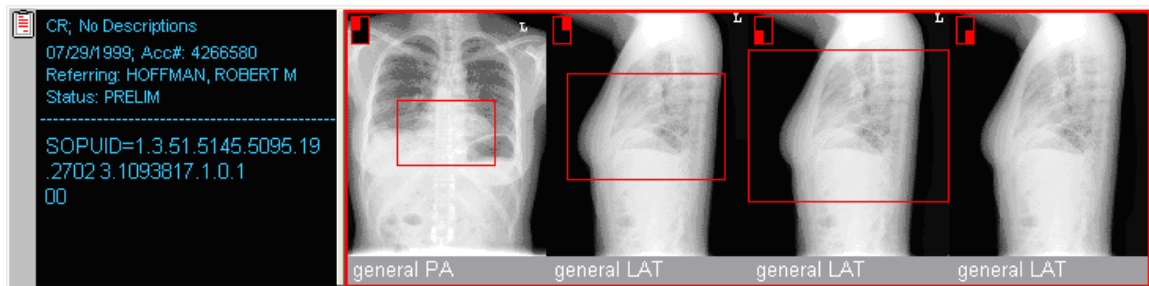


Fig. 31: Zoom rectangle example

Main or Prior Exam Indication

To identify if an exam is a main or prior exam, an indicator is added in the exams to indicate if the hung series belongs to the main exam or prior exam. This indicator is configurable by adding “main or prior indicator” option into the screen overlay.

Splitting Navigational Rectangles

Navigational Rectangles do not need to be contiguous and can be split according to your preference. You can split a single Navigational Rectangle into two parts, for example, with each part of the Navigational Rectangle residing in a separate patient exam.

You can disable the split Navigation Rectangle feature in the General user preferences section. See [“Setting General Preferences” on page 446](#).

- Click any Layout Icon except the first and drag the separated portion of the Navigational Rectangle to the desired images or series, as seen in the two images below.
- To recombine a Navigational Rectangle, drag the split portion to the image directly adjacent to the other portion.

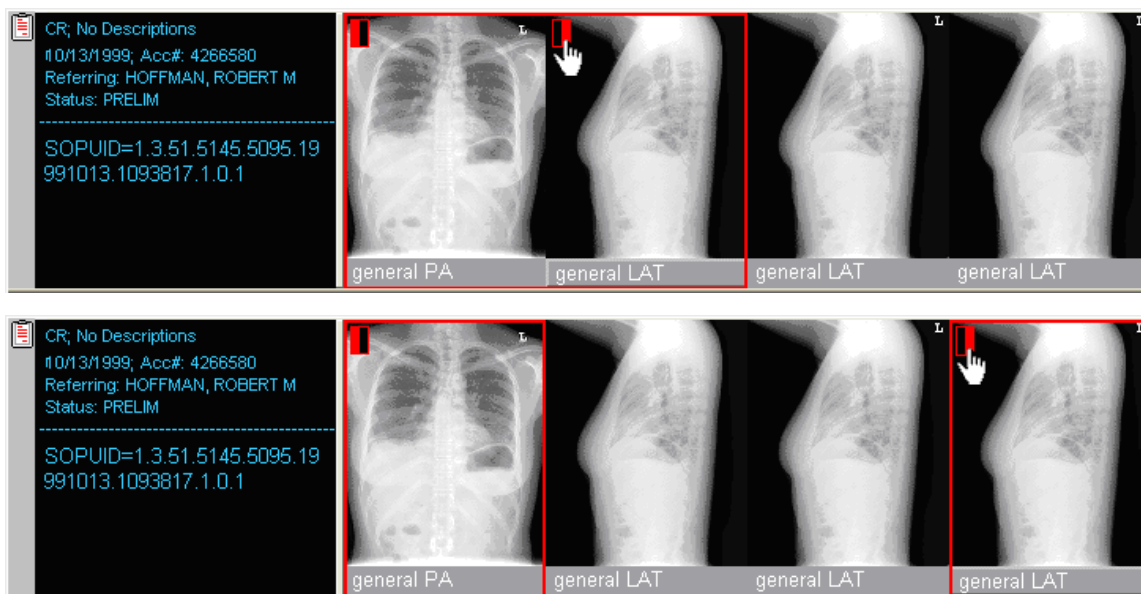


Fig. 32: Splitting Navigation Rectangles example

Reordering Images and Series in an Exam

You can reorder or move images or series in the Exam Rack to change the content of your diagnostic monitors. When an image or series is dragged into one of the navigational rectangles, it is displayed on the corresponding diagnostic monitor.

- To reorder or move an image or series in the Exam Rack, click the information bar at the bottom of the image or series and drag it to the desired location.

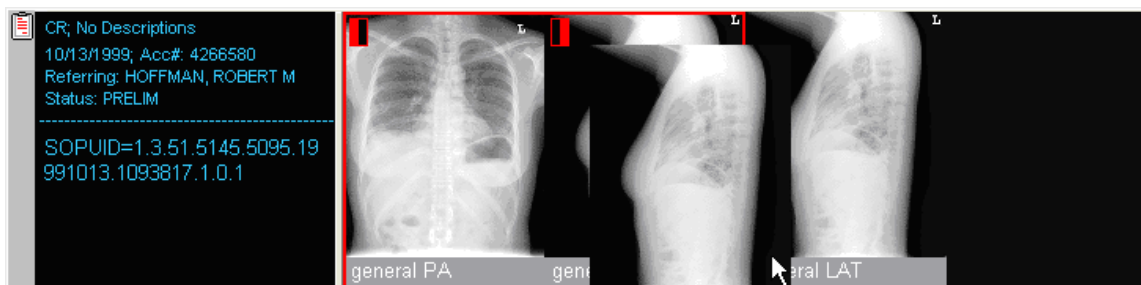


Fig. 33: Reorder image example

Using Thumbnail Images

Thumbnail images are the small images displayed in the Exam Rack. You can double-click a thumbnail image to display it in an image popup window. You can also right-click a thumbnail image and select **Create Popup** from the menu. See 'Using Image Popup Windows' (see page 265).

Right-clicking on a thumbnail image displays a menu with the following options, depending on the modality and whether the series is single-image or multi-sliced and whether it is displayed on the diagnostic monitor.

- **Interaction:** Allows you to select an enhanced cursor for zoom, pan, scroll, or brightness, if you have enabled this in the General user preferences. See [“Setting General Preferences” on page 446](#) and [“Enhanced Mouse Scheme” on page 531](#)
- **Window Width and Level (WW/WL):** See [“Setting the Window Width/Level” on page 259](#)
- **Image Processing:** See [“Image Processing” on page 267](#)
- **Scout Line Mode** (for CT, MR, PT): See [“Using the Scout Tool” on page 274](#)
- **Localizer Mode** (for CT, MR, PT): See [“Using the Localizer Tool” on page 275](#)
- **Create Popup:** Displays the image in a separate window.
- **Key Image:** See [“Using Key Images” on page 246](#)
- **Measurements:** See [“Using the User Tool Palette” on page 291](#)
- **Annotations:** [“Annotating Images” on page 320](#)
- **Delete All Measurements and Annotations:** [“Using the User Tool Palette” on page 291](#)
- **VOI LUT** (for CR, DX, and MG): See [“Value of Interest LUT \(VOI LUT\)” on page 262](#)
- **Clone:** See [“Using Clone Windows” on page 209](#)
- **Remove Clone:** See [“Removing Clones” on page 209](#)
- **Zoom Presets:** Allows you to select a preset zoom factor of **Fit to Window**, **100% (Original Size)**, **True Size**, **200%**, **300%**, or **400%**.
- **Export:** Allows you to select **Export via DICOM**, **Export Image via DICOM**, or **Anonymous Export via DICOM**. See [“iExport for DICOM Export” on page 348](#)
- **Monitor Layout:** Allows you to select one of the possible monitor layouts.
- **Clone Window with Preset:** See [“Using Clone Windows” on page 209](#)
- **Play Cine:** (for multi-sliced series): Allows you to scroll through the slices in a series either one-by-one (Loop mode) or rapidly (Loop/Bounce Mode). For a frame-by-frame review, slowly scroll the mouse-wheel. For rapid review, double-click the mouse-wheel and drag the mouse forward or backward or bounce. For **Coarse Fast Cine** mode in **Standard** mouse mode, click the middle mouse button while dragging the mouse up or down past the point in which you placed your cursor. In **Enhanced** mouse mode, left-click while dragging the mouse down past the point in which you placed your cursor.

NOTE

- Pressing the "-" keyboard key and number pad shall decrease the cine rate by 1.
- Pressing the "+" keyboard key and number pad shall increase the cine rate by 1,
- The "-" keyboard key and "+" keyboard key work regardless of pressing the shift button.

- **New Link:** See [“Linking Image Series” on page 249](#)

- **Link All Axials/Sagittals/Coronals/Obliques** (for multi-sliced series): [“Linking Image Series” on page 249](#)
- **Join Link** (if link type exists): Joins series to the existing link.
- **Leave Link** (if series is linked): Removes the series from the link.
- **Link Selected Images**: Links selected windows that are of the same type.
- **Unlink All**: See [“Unlinking Images” on page 254](#)
- **Activate/Deactivate Link**: See [“Activating and Deactivating Links” on page 254](#)
- **Save**: Saves the image.

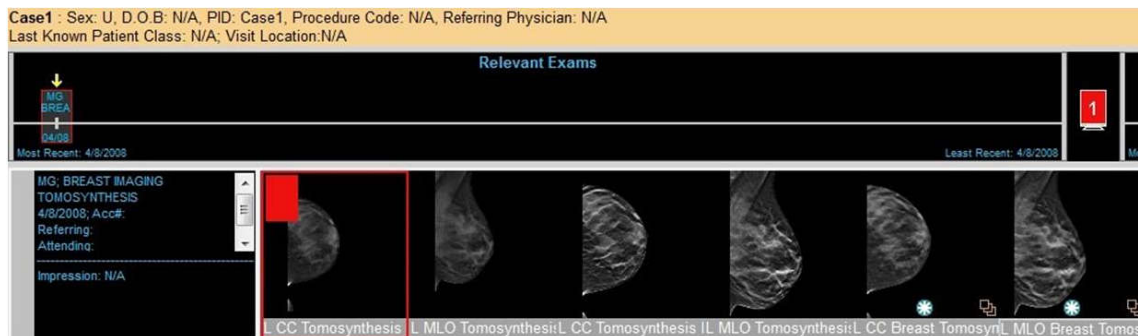


WARNING

Use caution when saving an image to the clipboard and copying it to another application. The image may contain confidential patient information.

- **Paper**: See [“Printing to Paper” on page 346](#)
- **To DICOM Printer**: See [“Printing to DICOM” on page 347](#)
- **Flip/Rotate/Sort/Split**: See [“Flipping an Image” on page 283](#)
- **Series Matching Rules**: See [“Series Matching Rules” on page 401](#)
- **Delete**: See [“Deleting Studies and Images” on page 417](#)
- **Assign New Unique Study UID**: See [“Manually Assigning New Unique Study Instance UIDs” on page 412](#)
- **Detach Study from Exam** (for exams having two or more studies): See [“Detaching Individual Studies from Exams” on page 210](#)
- **MPR**: Opens the selected image in MPR view in Volume Vision. See [“Philips IntelliSpace Clinical Applications” on page 329](#).
- **MIP**: Opens the selected image in MIP view in Volume Vision. See [“Philips IntelliSpace Clinical Applications” on page 329](#)
- **Volume Rendering**: Opens the selected image in 3D view in Volume Vision. See [“Philips IntelliSpace Clinical Applications” on page 329](#)

Tomo-Synthesis Indicator



A stack indicator icon  is displayed on the thumbnail area for the Tomo-Synthesis series.

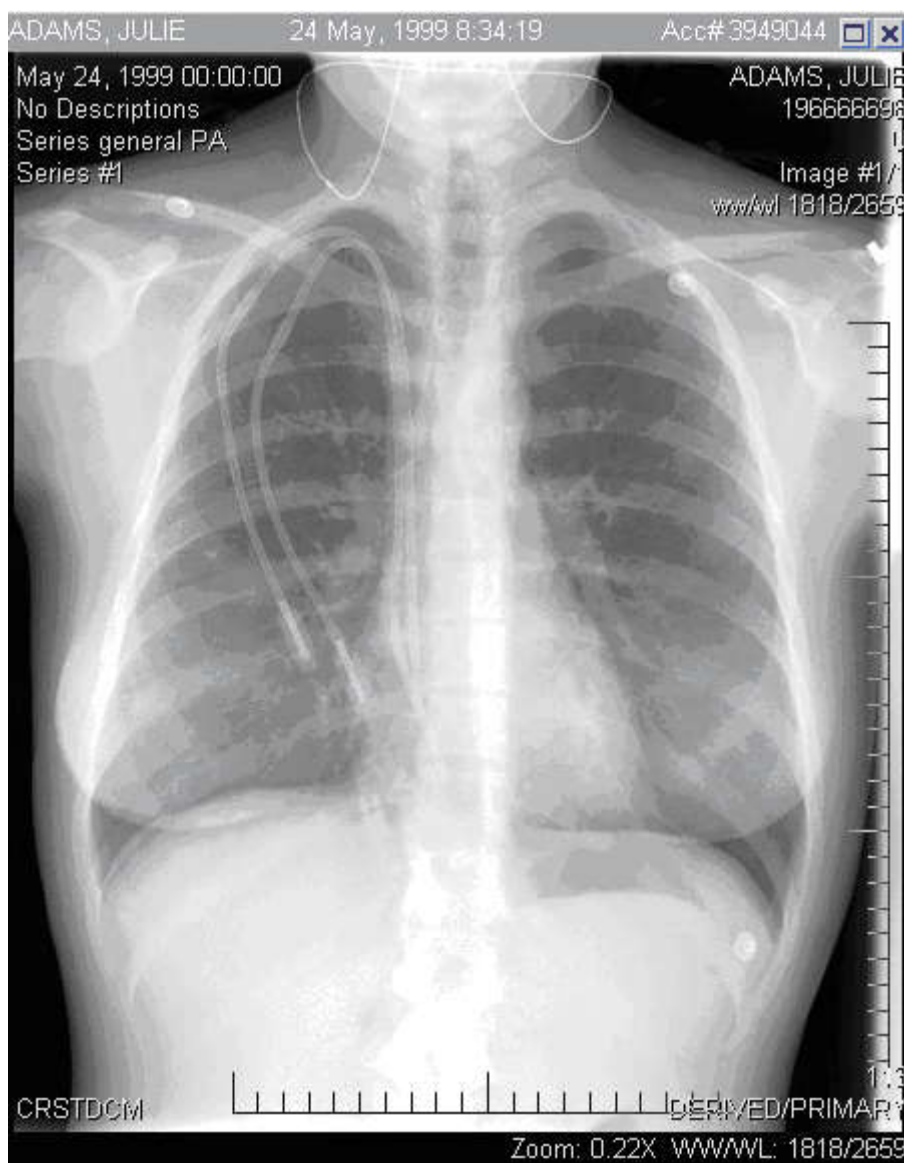
Using Image Popup Windows

The Image popup windows provide additional image manipulation functionality that are not available for thumbnail images. You can arrange these windows by dragging them to the desired location on the Canvas Page and resizing them.

You can display an image popup window by doing one of the following:

- Double-clicking a thumbnail image
- Right-clicking an image and selecting **Create Popup** from the menu.

You can minimize popup windows by double-clicking on the window's top margin. To re-enlarge the window, double-click the image margin.



Right-clicking on an image popup window displays a menu with the following options, depending on the modality and whether the series is single-image or multi-sliced:

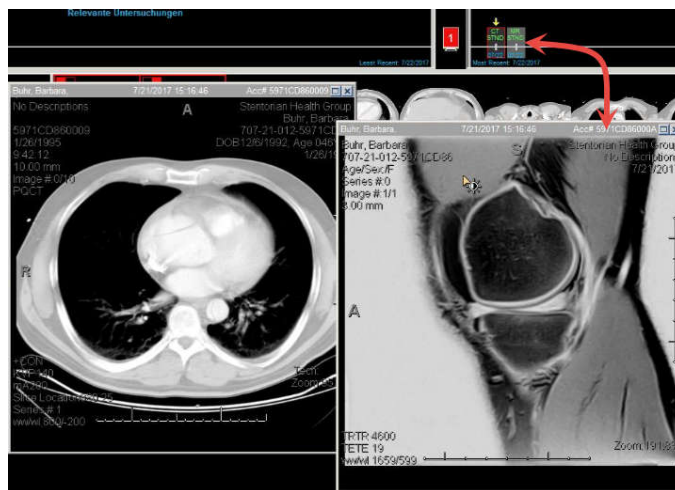
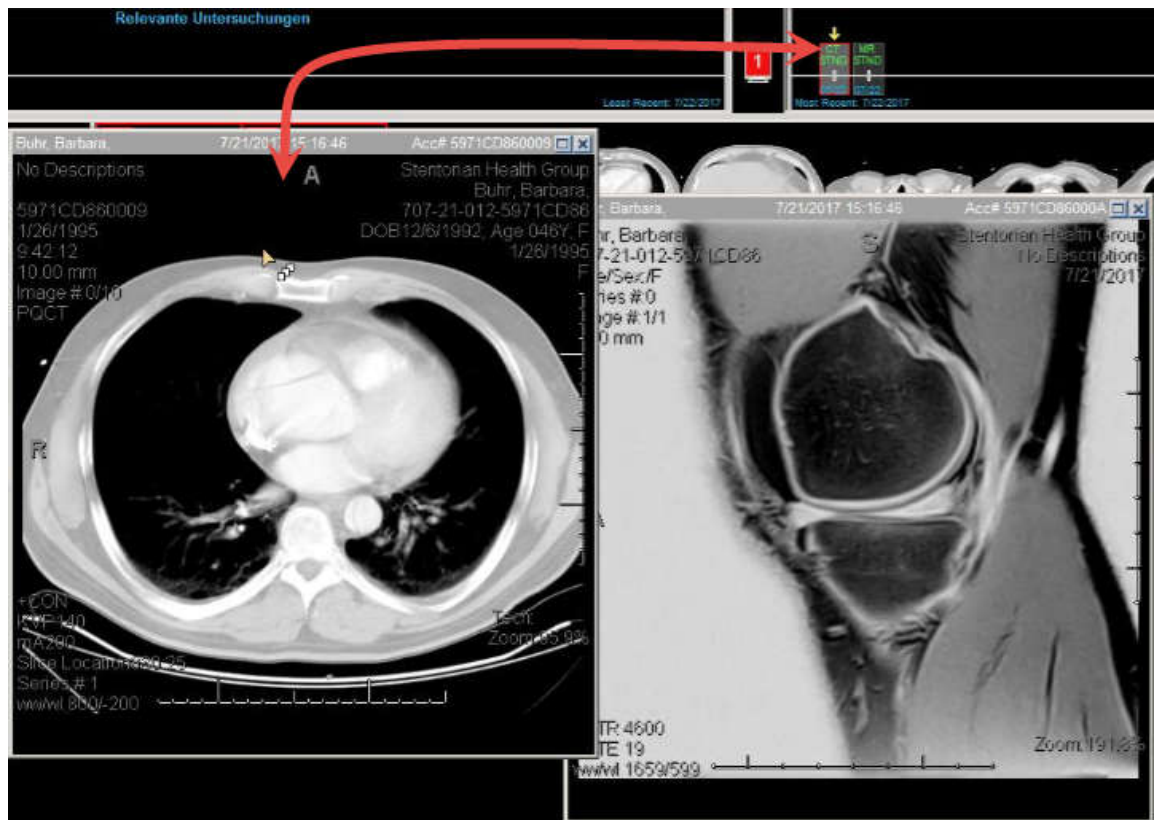
- **Interaction:** Allows you to select an enhanced cursor for zoom, pan, scroll, or brightness, if you have enabled this in the General user preferences. See [“Setting General Preferences” on page 446](#) and [“Enhanced Mouse Scheme” on page 531](#)
- **Window Width/Level (WW/WL):** See [“Setting the Window Width/Level” on page 259](#).
- **Measurements:** See [“Using the User Tool Palette” on page 291](#)
- **Annotations:** See [“Annotating Images” on page 320](#)
- **Delete All Measurements and Annotations** (if there are annotations): See [“Clearing Measurements and Annotations” on page 295](#)
- **Image Processing:** See [“Image Processing” on page 267](#)
- **Scout Line Mode** (for CT, MR, and PT): See [“Using the Scout Tool” on page 274](#)

- **Localizer Mode** (for CT, MR, and PT): See [“Using the Localizer Tool” on page 275](#)
- **Multi-Image Mode** (for stack images): Allows you to split a series window so that multiple slices can be displayed in a single image window.
- **Key Image**: See [“Using Key Images” on page 246](#)
- **Play Cine**: (for multiframe or stacked series): Provides an option to activate the loop or bounce. Right-click the image again to stop it.
- **New Link**: See [“Linking Image Series” on page 249](#)
- **Link All Axials/Sagittals/Coronals/Obliques** (for multi-sliced series): [“Linking Image Series” on page 249](#)
- **Clone**: See [“Using Clone Windows” on page 209](#)
- **Clone Window with Preset**: [“Using Clone Windows” on page 209](#)
- **Save**: Saves the image.
- **To Paper Printer**: See [“Printing to Paper” on page 346](#)
- **Print to DICOM**: See [“Printing to DICOM” on page 347](#)
- **Flip/Rotate/Sort/Split**: See [“Flipping an Image” on page 283](#)
- **Zoom Presets**: Allows you to select a preset zoom factor of **Fit to Window**, **100% (Original Size)**, **True Size**, **200%**, **300%**, or **400%**.
- **Magnifying Glass**: See [“Using the Magnifying Glass Tool” on page 278](#)
- **Matching Series Rules**: See [“Series Matching Rules” on page 401](#)
- **MPR**: Opens the selected image in MPR view in IntelliSpace PACS with advanced visualization tools. See [“Philips IntelliSpace Clinical Applications” on page 329](#).
- **MIP**: Opens the selected image in MIP view in IntelliSpace PACS with advanced visualization tools. See [“Philips IntelliSpace Clinical Applications” on page 329](#)
- **Volume Rendering**: Opens the selected image in 3D view in IntelliSpace PACS with advanced visualization tools. See [“Philips IntelliSpace Clinical Applications” on page 329](#)

Identifying the Pop-ups

When pop-ups are opened, user can identify to which exam a pop-up belongs to.

- Mouse over a pop-up.
- When multiple pop-ups are open, hovering over the pop-up highlights that images exam icon on the timeline.



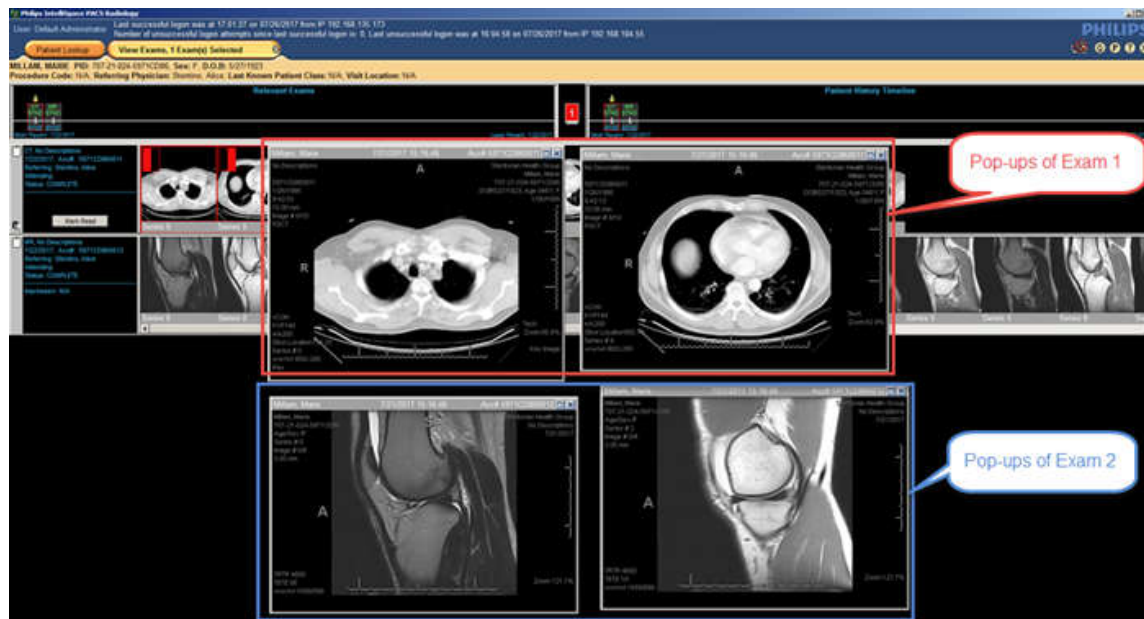
Show/Hide Pop-up Windows

This section will guide you to manage the display of the image pop-up windows.

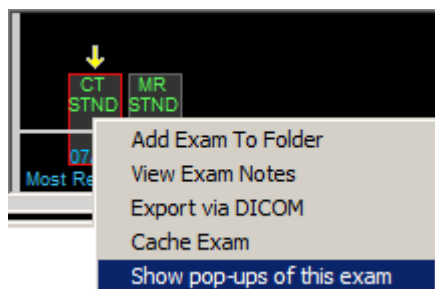
Show Pop-ups of this exam

When multiple pop-ups of different exams are open, the **Show Pop-up of this exam** option allows users to view only the pop-ups associated with the selected exam.

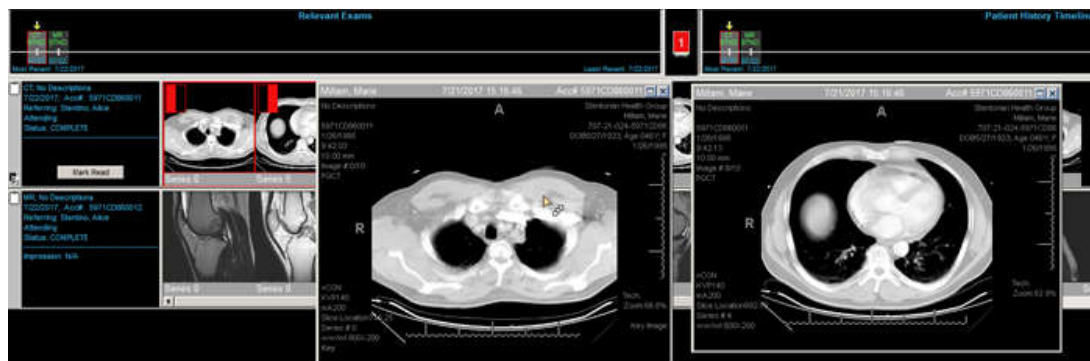
Let us assume that the user has opened up pop-ups of multiple exams as shown below.



1. From the **Patient History Timeline**, right click on the exam icon (small square box) of the exam whose pop-ups alone you wish to view.
2. Select **Show pop-ups of this exam** in the resulting context menu.



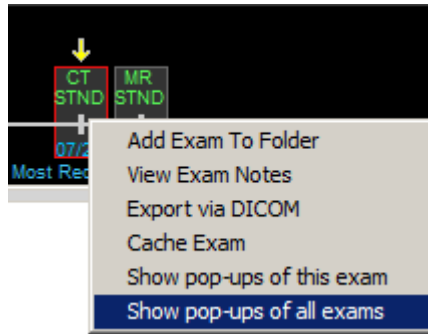
The selected exam's pop-ups will be retained for viewing and all the other pop-ups will be hidden.



Show Pop-ups of All Exams

To again view the hidden pop-ups of other exams:

1. Right-click on the exam(s) whose pop-ups are currently being viewed or hidden.
2. Select **Show pop-ups of all exams**.



All the pop-ups that were hidden can be viewed again.

NOTICE

The menu "Show pop-ups of this exam" will be available only for the exam(s) with pop-ups already opened.

Using Clone Windows

Clones are copies of images or series that provide alternate image processing, and enable you to apply different filters and Window Width and Levels. When you create a clone, it is displayed as a thumbnail image in the Exam Rack on the Canvas Page. You can double-click a cloned thumbnail to display it in a large image popup window for better resolution.

You can use clones to clone all single image windows and apply the **Invert Image** feature to the clone(s) or to clone all stacked image windows with a Lung or Bone Window Width and Level Preset.

Cloned images in the Exam Rack are marked with a "C" and a sequential number (C1, C2, and so on).

- In the Exam Rack, right-click the image you want to clone. From the menu, select **Clone**.
- Double-click the cloned image to open it in an image popup window.

Removing Clones

- Right-click a cloned image and select **Remove Clone** from the menu.

Using Diagnostic Monitors

The menu options that are available when you right-click on a diagnostic monitor image are a combination of some of the options in the Thumbnail and image popup windows for the same modality and series-type (single or multi-sliced). It also includes the **Relevant Exam** option, which lets you select and display a relevant exam.

In multi-image mode, double-clicking on a pane toggles between full screen image mode and multi-image mode.

Detaching Individual Studies from Exams

Sometimes a study gets associated with the wrong exam. In this case, you don't want to detach both studies from an exam, just the one that should be associated with another exam. If you have the proper privileges, you can detach individual DICOM studies from an exam for a thumbnail image on the Canvas Page, as long as the selected thumbnail window is not a Clone or Key Image window. Detached studies will become exceptions and should be resolved to the correct exam.

NOTE

When a study is detached from an exam, IntelliSpace PACS may not be able to determine whether that study was used to set the exam fields. Therefore, when an exam gets created with no modality type and body part, the following might occur:

- Study1 arrives and is wrongly attached to the exam. The modality and body part of study1 is copied into the exam.
- When Study 2 arrives for the exam (correctly), its modality and body part are ignored (because the exam already has them set).
- When you detach Study1 from the exam, IntelliSpace PACS shows the wrong modality and body part for the exam.

To correct this problem, manually edit the exam and select an exam code that is associated with the correct modality and body part.

1. Right-click on the thumbnail image and from the menu, select **Detach Study from Exam**. The **Detach Study from Exam** dialog box displays. The **Reason** field is populated from the **Reason** dictionary.
2. Review the **Study Description** area to see the original DICOM metadata for the following:
 - Patient Name
 - Accession Number
 - Date of Birth
 - Sex
 - MRN

- Study Date
3. Review the **Series/Images** area tree control to see the following information:
 - Study UID of the selected DICOM study
 - Total Number of images associated with the selected DICOM study
 - Series UID(s) of all the series associated with the selected DICOM study
 - Image UID(s) of all the images associated with the selected DICOM study
 4. Enter the reason you want to detach the study, or select a **Reason** from the list.
 5. Click **OK**. A message displays while the study is being detached from the exam.

13 ECG Viewer

The ECG wave form that is acquired during a cardiac CT scan can be viewed in the exam rack. The prerequisite to view the ECG wave form is that it should be obtained from a Philips CT scanner. To view an ECG, the configurations must be enabled in the server, and the ECG viewer plug-in must be installed on the client.

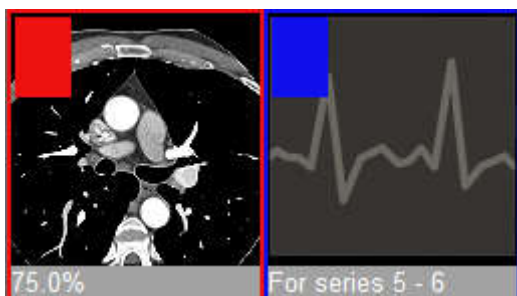


WARNING

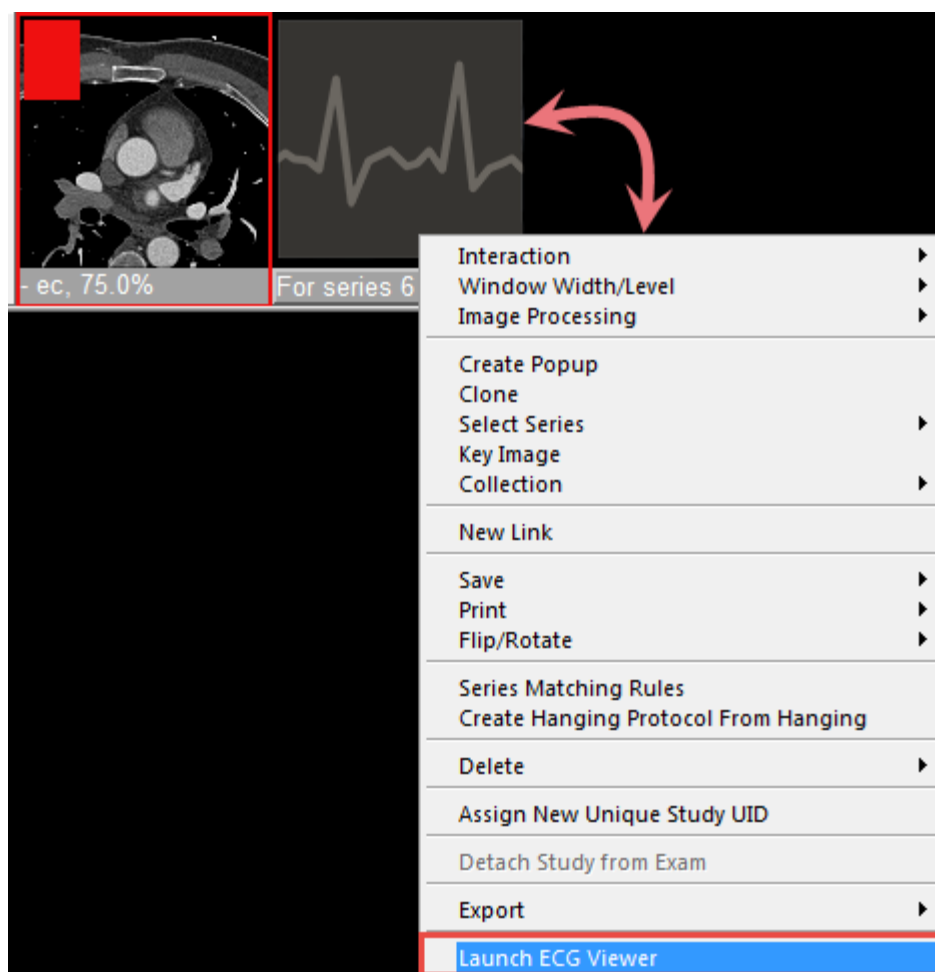
The ECG Viewer should not be used for diagnostic purposes.

Launching the ECG Viewer

When a Cardiac CT study is opened on the canvas page, the ECG Waveform is seen as a thumbnail image on the exam rack as shown below:



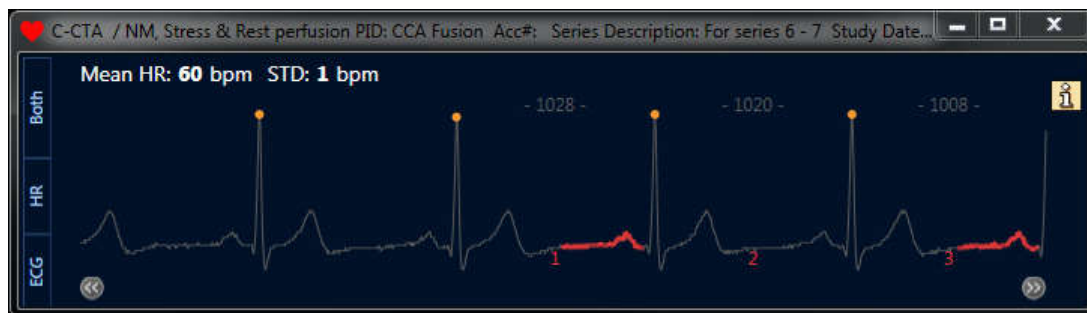
1. Right-click on the ECG Waveform thumbnail and select **Launch ECG Viewer**.



OR

- Double click the ECG Waveform.

The **ECG Viewer** opens.



ECG thumbnail can also be hung like any other image on the diagnostic monitor. The ECG viewer window is displayed on the monitor where the user launches it:

- Radiology Operating Panel (ROP)
- Diagnostic Monitor

Since the ECG viewer has color markings, it is recommended to launch the ECG viewer on the ROP, unless the user has a color diagnostic monitor.

NOTE

If the ECG viewer is launched on the monochrome monitor, the x-ray markings on the ECG will be gray in color and the markings cannot be distinguished.



WARNING

The ECG Viewer should not be used for diagnostic usage.

Tip

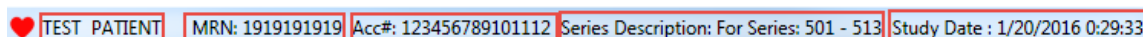
The ECG Viewer can be resized and moved across the monitors.

Understanding the ECG Viewer

The ECG viewer provides numerous functions. This section will guide you to understand the different functions available in the ECG viewer.

Title Bar

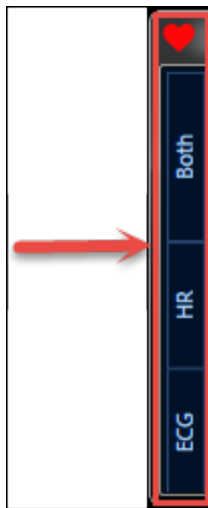
The ECG Viewer's title bar provides the following information:



- Patient Name
- Accession number
- Patient Identifier
- Series description: Provides the details of the CT series, for which is CT is acquired
- Study Date

Tabs

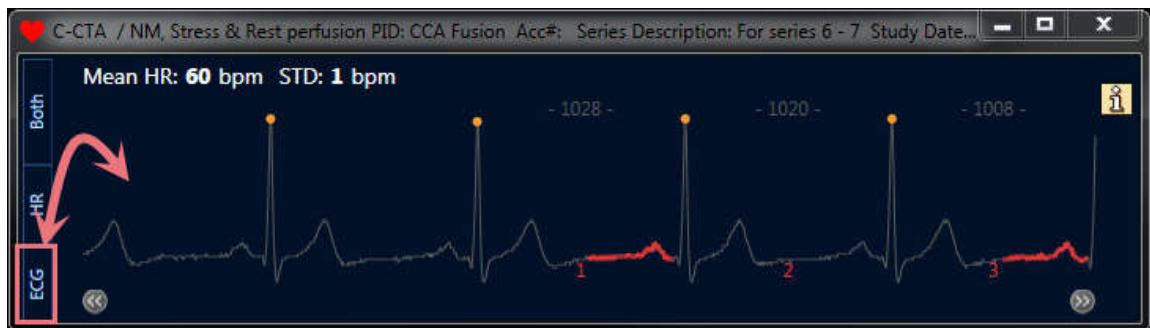
There are three tab view in the ECG Viewer, which provides various details as described in the section:



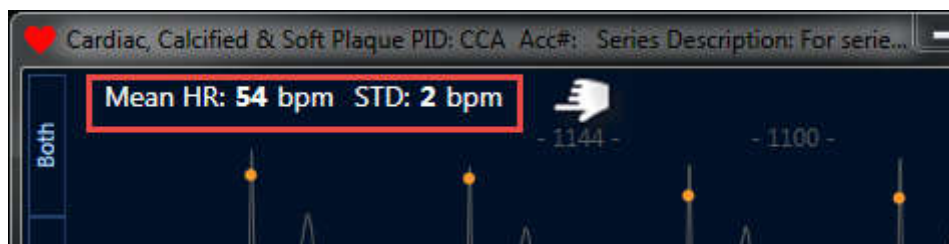
- ECG
- HR (Heart Rate)
- Both

ECG

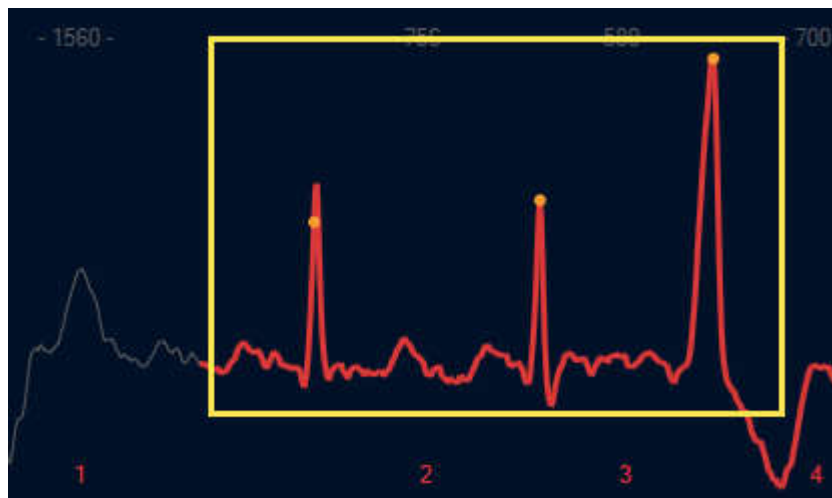
The ECG tab view displays the ECG waveform along with various navigation options. This view is the default view for the ECG viewer.



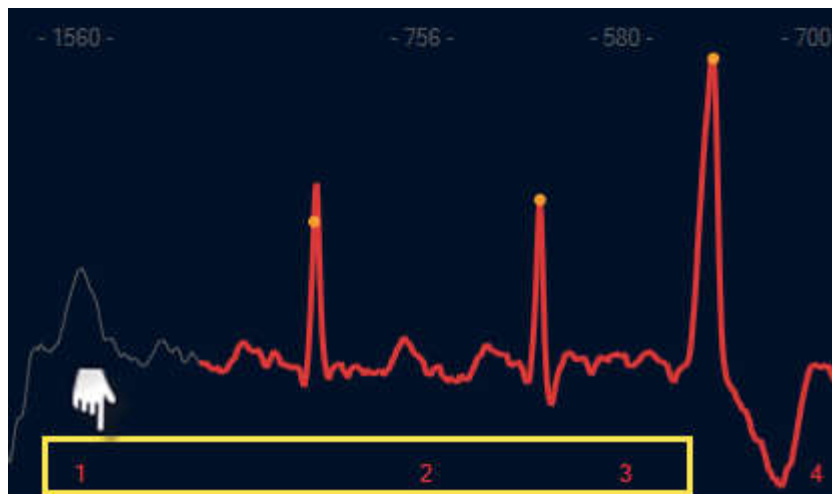
- **Mean HR/ STD:** The Mean Heart Rate and the STD (Standard Deviation) is indicated on the top on the waveform as shown below: It is the mean and standard deviation calculated considering all the cardiac cycles in the entire ECG waveform.



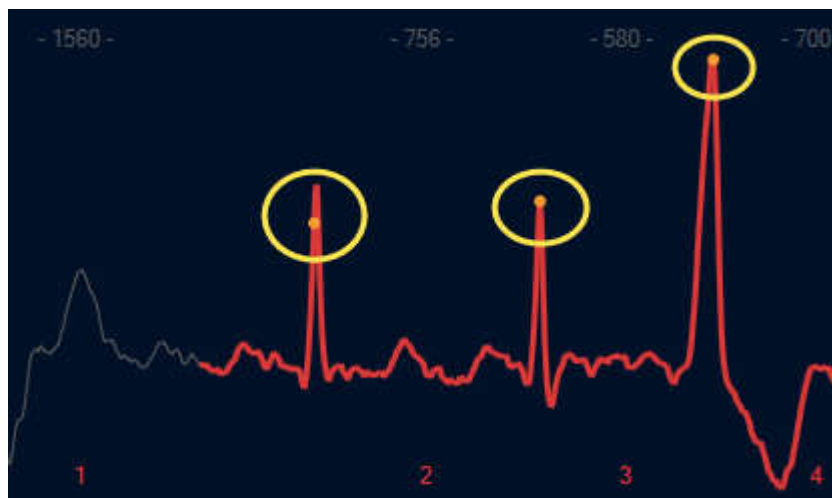
- The waveform represented in red color (shown below) indicates the time duration the x-ray was turned on during the ECG procedure.



- The different numbering below the waveform indicates the different cardiac cycles.:



- The yellow dots indicates the RR peak. The RR interval is the time duration between the R peaks. The RR peaks are indicated by yellow dots.



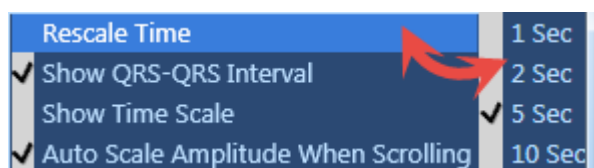
Menus

The ECG tab view also provides some viewing options to optimize the usage of the ECG Viewer. This section will describe these options in details.

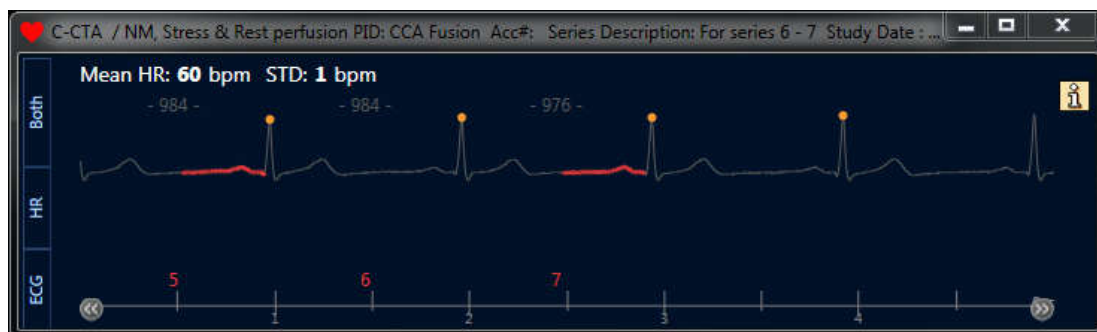
1. Right click inside the ECG viewer to see a list of menus:



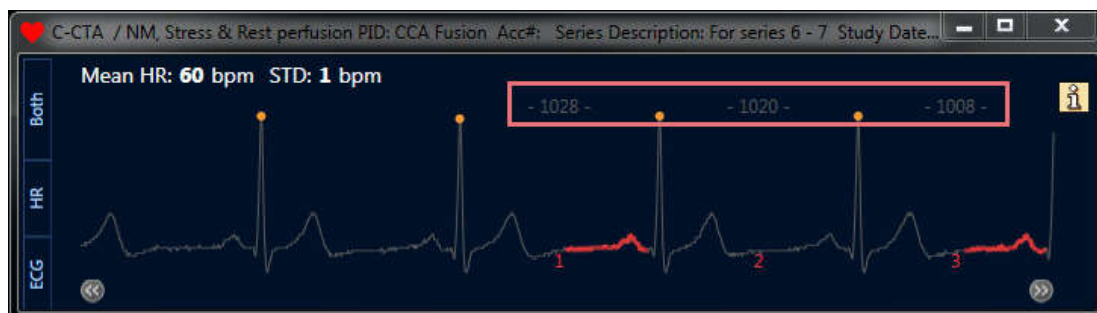
- **Rescale Time:** Used to rescale the x-axis time scale duration. Default values is 5 sec, and it can be changed as 1, 2, or 10.



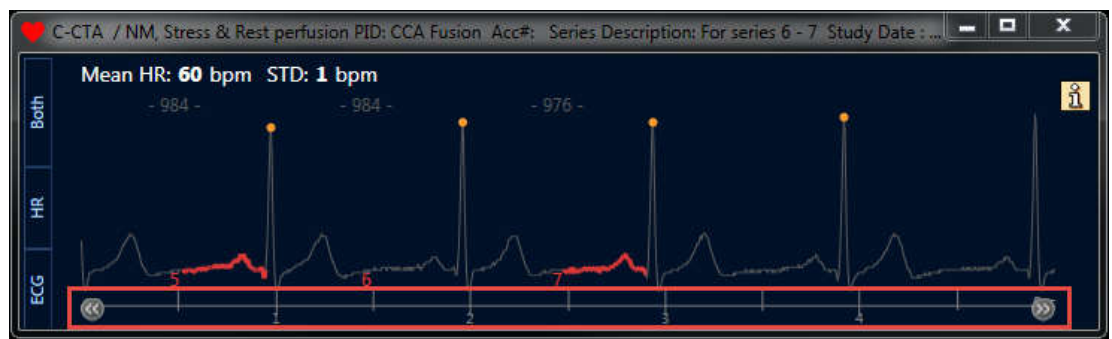
For example, if you select 10 sec the following waveform pattern displays:



- **Show QRS-QRS Interval:** This indicates the time duration between cardiac QRS cycles as shown below:



- **Show Time Scale:** This indicates the x-axis timescale.



- **Auto Scale Amplitude when Scrolling:** The ECG wave form amplitudes will be auto scaled to support scrolling.

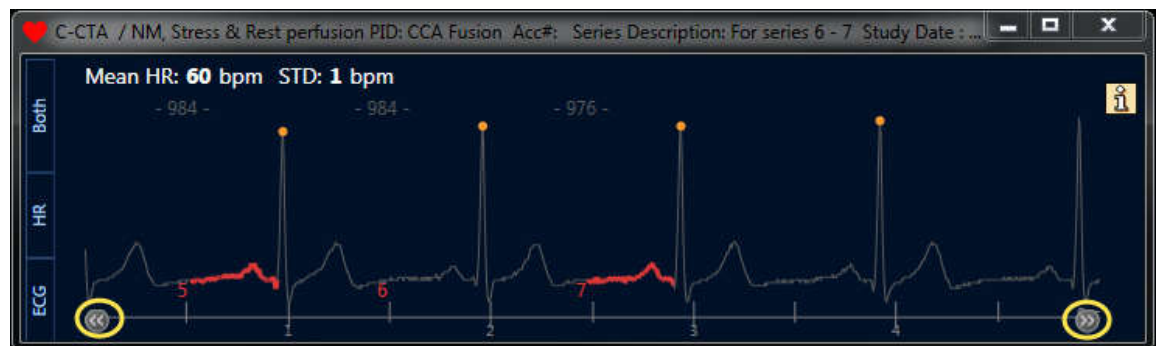
Navigation

1. Navigate through the ECG waveform using the following methods:

- Either use the mouse wheel located between the left and the right mouse buttons to navigate through the ECG waveform.

OR

- Use the arrow indicators, which can be located at the bottom corners of the ECG viewer.



Using Icons

Icon	Description
	1. Click the “i” icon to view the wave statistics:

Wave Statistics

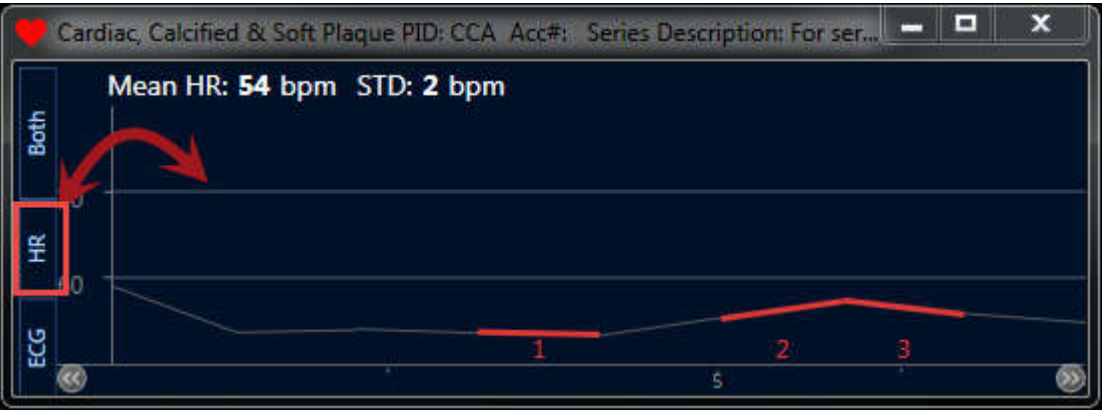
Mean HR	57 bpm
HR STD	6
Mean QRS-QRS Interval	1053 ms
QRS-QRS Interval STD	117
HR Range	47 – 68 bpm
Number of Cycles	7

Close

- Mean HR
- HR STD
- Mean QRS-QRS Interval
- QRS-QRS Interval STD
- HR Range
- Number of Cycles

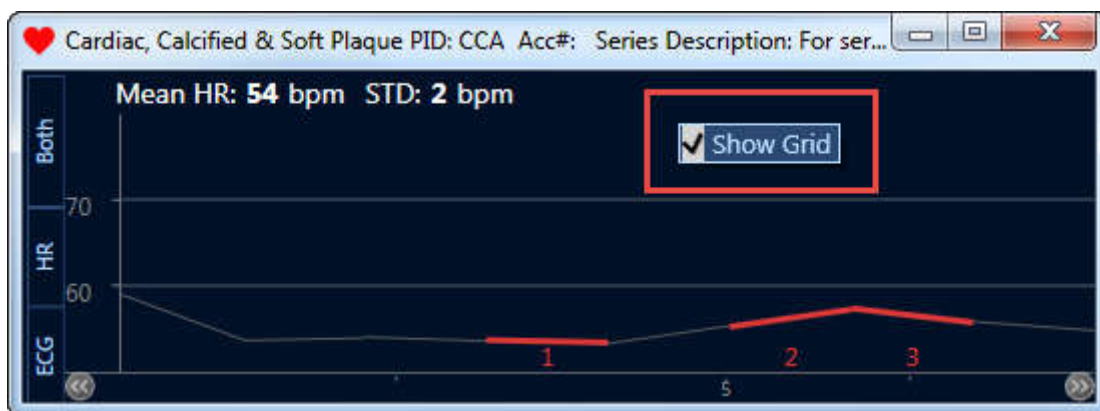
Heart Rate

The Heart Rate tab indicates the variation in the heart rate during the scan. The red marking indicates the duration when the x-ray is turned on the scanner.

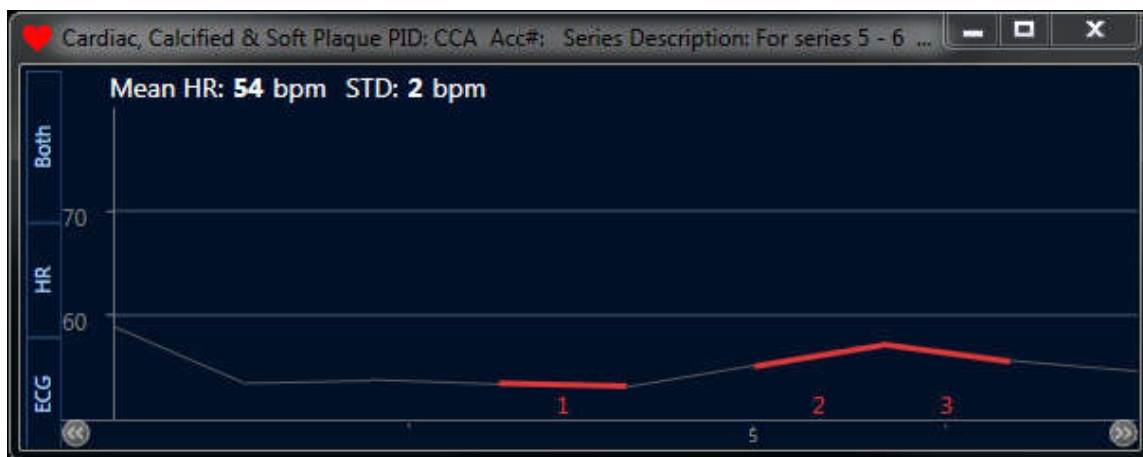


- The “x” axis in the heart rate tab is the time scale and indicates the time duration

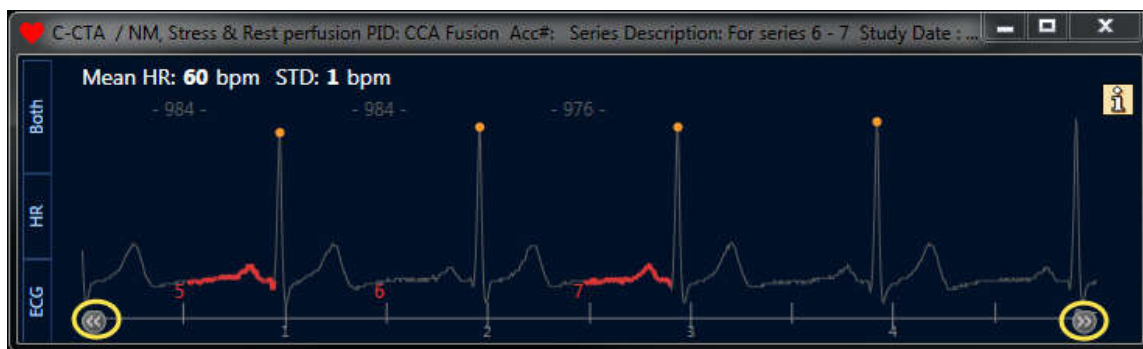
- The “y” axis indicates the heart rate
- Right-click anywhere in the window to view the “Show Grid” option.



The Show Grid option draws horizontal lines corresponding to the heart rate.

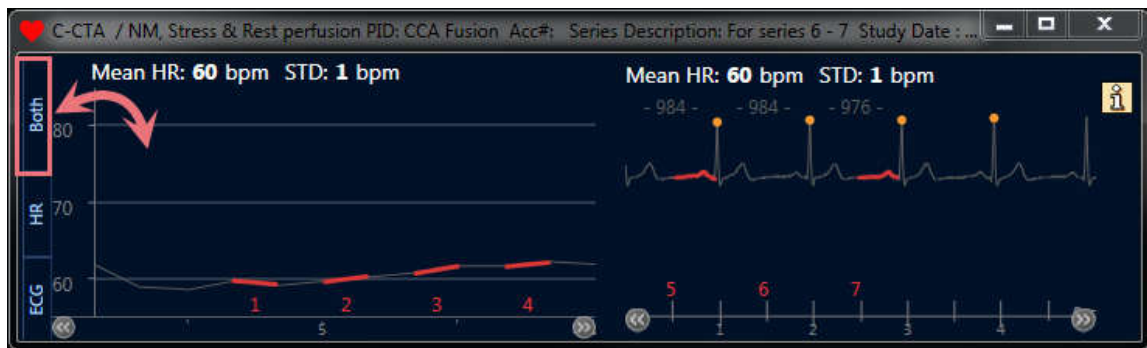


- Navigate through the wave form using the mouse wheel.
- OR
- By using the arrow indicators at the bottom corners of the ECG viewer.

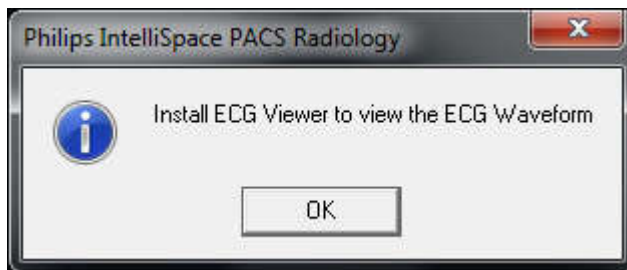


Both

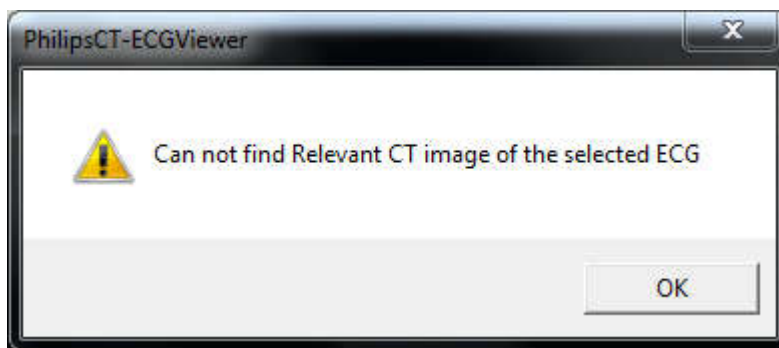
The **Both** tab displays both the ECG and the HR tab view side-by-side.



Things to Know



- This above error message window will be displayed if PhilipsCT-ECG Viewer is not installed in the system. Install the PhilipsCT-ECG Viewer and continue.



- The above error message window will be displayed on trying to open the ECG viewer for the ECG that is sent from a non Philips CT machine.

NOTE

The ECG Viewer does not support ECGs from a non Philips CT machine.

14 Viewing and Manipulating Images

IntelliSpace PACS includes the following features you can use to view and manipulate images:

- **Presentation States:** See [“Using Presentation States”](#) on page 226
- **Conference Presentation States:** See [“Using Conference Presentation States”](#) on page 232
- **Collections:** See [“Working with Collections”](#) on page 238
- **CAD Markers:** See [“Working with CAD Markers”](#) on page 244
- **Key Images:** See [“Using Key Images”](#) on page 246
- **Linking Image Series:** See [“Linking Image Series”](#) on page 249
- **Window Width/Level:** See [“Setting the Window Width/Level”](#) on page 259
- **VOI LUT:** See [“Value of Interest LUT \(VOI LUT\)”](#) on page 262
- **Mammograms:** See [“Standard Presentation of Mammograms”](#) on page 263
- **Invert Image:** See [“Inverting an Image”](#) on page 268
- **Edge Enhance:** See [“Enhancing the Edges of an Image”](#) on page 270
- **Edge Detect:** See [“Detecting the Edges of an Image”](#) on page 271
- **Median Filter:** See [“Filtering the Image”](#) on page 271
- **Histogram:** See [“Using Contrast Limited Adaptive Histogram Equalization”](#) on page 272
- **Scout Mode:** See [“Using the Scout Tool”](#) on page 274
- **Localizer Tool:** See [“Using the Localizer Tool”](#) on page 275
- **Zooming:** See [“Zoom Presets”](#) on page 276
- **Magnifying Glass:** See [“Using the Magnifying Glass Tool”](#) on page 278
- **Step Zoom:** See [“Using the Step Zoom Tool”](#) on page 279
- **Panning:** See [“Panning Around an Image”](#) on page 282
- **Interpolation:** See [“Selecting an Interpolation Scheme”](#) on page 273
- **Flip:** See [“Flipping an Image”](#) on page 283
- **Rotate:** See [“Rotating an Image”](#) on page 283
- **Sort:** See [“Sorting Images”](#) on page 283
- **Split:** See [“Splitting Exams”](#) on page 284 and [“Splitting Series”](#) on page 284
- **Shutter effects:** See [“Viewing Shutter Images”](#) on page 286

Marking an Exam as Read

When you have finished reading an unread exam, you should mark that exam as “read.” Unread exams display the **Mark Read** button in the Exam Info area of the Canvas Page. If the System Administrator has set this preference, you can mark an exam as read multiple times until the status of the exam is Finalized. See [“Setting General Preferences”](#) on page 471 in the Setting System Preferences chapter.

Do one of the following:

- Click **Mark Read** on the Exam Info part of the Canvas Page. IntelliSpace PACS Radiology can be configured to load the next exam in your worklist.
- Press **F3** to toggle the “Marked Read” designation on and off for the active exam.



WARNING

Use best practices to ensure that any images that arrive after Mark Read are included when making a diagnosis.

When a radiologist clicks the **Mark Read** button, IntelliSpace PACS Radiology automatically creates a Mark Read Presentation State for the exam, and the study drops off the reading worklist. However, it is possible that an exam is marked read before all images are received. In that case, the Mark Read Presentation State will contain images that the radiologist did not read, and IntelliSpace PACS will display a pop-up notification to the radiologist that the study has new images. The radiologist can then reopen the study, read the remaining images, again mark read the study, and add an addendum to the report, if necessary.

To ensure that all images are read, IntelliSpace PACS allows users with the proper permissions (usually PACS Administrators) to configure an interval for checking for new images for the main exam. Therefore, new images may be loaded on the canvas page that have been added to the main exam since that exam was initially opened. In addition, the timeline is refreshed.

Upon closing an exam or marking an exam as Read, IntelliSpace PACS checks if new images have arrived and were loaded onto the Exam Rack after the user opened the exam. The user will have the option to not close or mark the exam as read. After checking for new images, if IntelliSpace PACS finds that new images are available but not yet loaded on the Exam Rack, a warning message displays, giving the user the option to either load the new images or continue closing or marking an exam as read. Additionally, an icon displays in the Exam Margin when new images have been added to a study loaded on the Exam Rack.

NOTE

If the Automatically open next unread exam from active filter after marking read check box is selected in the General User Preferences and you attempt to open an exam for a VIP patient after marking an exam as having been read, a message is displayed asking you to acknowledge the VIP status of the patient whose exam is about to be opened. You can click **Yes** to proceed and read this exam or click **Skip** to move to the next unread exam.

New Images After Mark Read

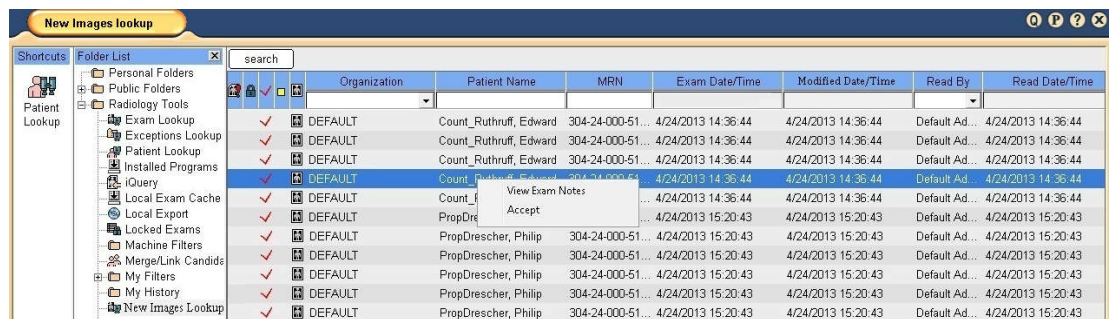
If the New Images After Mark Read feature has been enabled, an additional folder is displayed in the Folder List, called New Images Lookup. It is similar to the Exam Lookup, except that it displays a list of exams for which new images have arrived after they have been marked read in IntelliSpace PACS Radiology.

There are two ways of working with images that have been received after an exam has been marked read:

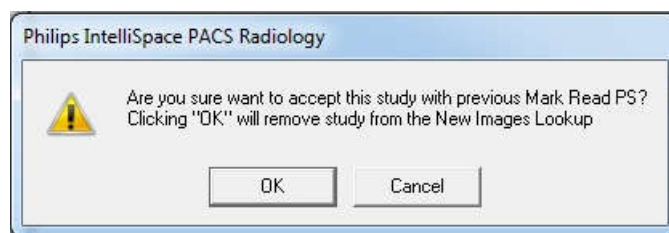
- In the New Images Lookup, double-click the exam to open it in the Canvas Page. Click **Mark Read** to mark this exam as read again, after reviewing the new images, or **Accept** to accept the previous report without including the new images.



- In the New Images Lookup, right-click the exam and select **Accept** to accept the previous report without including the new images.



A message displays if you **Accept** without opening the exam on the Canvas Page.



Note the following:

- An indicator displays on the New Images Lookup icon when a radiologist first logs in and if there are any exams that have been read by the logged-in user which have new images after being marked read. The New Images Lookup is not refreshed automatically, so users must open the folder to see if additional images have arrived for marked read exams.
- The actions in the New Images Lookup are audited (both marking an exam read with new images or accepting the previous report after new images have arrived).

- You cannot filter the New Images Lookup by Exam Date/Time.
- No additional rights are required to use New Images After Mark Read. The Exam Lookup and Mark Read rights are used.
- You cannot create any type of exclusion filters to prevent exams from appearing in the New Images Lookup.
- When an exam is opened from the New Images Lookup, there is no support for mark read for Advanced Mammography workflow. However, the user can accept these exams.
- When an exam is opened through a plug-in (e.g. PowerScribe Plug-In) from New Images Lookup in IntelliSpace PACS Radiology, the “Accept” button will not be available, and only “Mark Read” button will be available in the Canvas page.

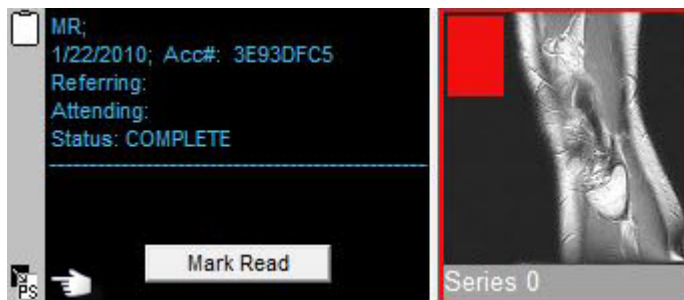
Using Presentation States

A presentation state allows you to save the state of the exam as last viewed. This may include annotations and measurements or the way the exam is laid out. For example, if you open an exam, cine to particular slices in a series and adjust the Window Width and Level values, then save the presentation state, this configuration of the exam is preserved. Some features, such as the location of **Scout Lines** and the **Localizer Tool** are not preserved in presentation states.

In addition to System presentation states, you can create, edit, save, and delete Conference Presentation States for activities such as training, conference, and review rounds. See [“Using Conference Presentation States” on page 232](#).

You can create a new presentation state or load a pre-configured presentation state created by a user or Technologist. When an exam presentation state is displayed, the Presentation State

icon  is displayed in the exam margin.



The Presentation State conflict icon  (with different background color) will be displayed when the following conditions are met:



- If there are multiple presentation states for the exam
- If more than one presentation state has same value for **Content Label (0070,0080)**, **Content Description (0070,0081)** & **Content Creator name(0070,0084)** tags
- If two or more Presentation States having same value for these tags refer to a common image

NOTE

If the above Presentation State icon is seen even after saving a new Presentation State, try to rehang the canvas page OR apply the same saved presentation state through a shelf context menu.

The initial presentation state of an exam depends on which presentation states are available. The following types of presentation states are available:

- Original DICOM
- Technologist
- Pre-read
- User

These types are weighted. For example, if no presentation states have been created, the initial presentation state is the Original DICOM state. If a Technologist has created a presentation state, that will be presented first instead of the Original DICOM. If a Radiologist has created a presentation state, that will be presented first instead of the Technologist's presentation state.

Note the following:

- DICOM grayscale presentation state studies are supported. See [“DICOM Grayscale Softcopy Presentation States \(GSPS\)” on page 229](#).
- If additional images have been added to the exam since the default presentation was last saved, the exam will open using the Original DICOM presentation state, and a message will display alerting you that additional images have been added to the exam.
- Native iSyntax presentation states not in GSPS are not exported.

- If the exam has only an Original DICOM presentation state or only a User presentation state, the Hanging Protocol setting for the image states is applied when the exam is opened in the Canvas Page. If a presentation state is selected, edited, or created from this exam, the presentation state is applied, regardless of any Hanging Protocol.

Saving a Presentation State

1. Open and make the desired adjustments to the exam.
2. Right-click the Exam Margin and from the menu, select **Presentation State**, then **Save Presentation State**. The **Save Presentation State** dialog box displays.
3. Enter a name for the presentation state.
4. Select one of the following types for the presentation state:
 - **Technologist**: Select this type if you are a Technologist who is configuring the exam to be reviewed by a Radiologist.
 - **Pre-read**: Select this type if you are a Radiologist who is performing a preliminary review of an exam via IntelliSpace PACS, possibly doing measurements remotely from home. When you create the final diagnostic report, the exam will contain the preliminary measurements.
 - **User**: Select this type if you are creating presentation states for your own personal use as these presentation states are only visible by you.
5. Click **OK**. The presentation state is saved and listed with the other presentation states. The list includes the name of the presentation state, the user name, and the date and time the presentation state was created.

NOTE

IntelliSpace PACS Radiology checks to see if new images were added to the exam in question while you were creating a presentation state. If new images are present, you cannot save the presentation state; you have to reload the exam and begin again.

Selecting a Presentation State

1. Open an exam.
2. Right-click the exam margin and from the menu, select **Presentation State**, then select the desired presentation state.

Updating the Mark Read Presentation State

1. Open an exam.
2. Right-click the exam margin and from the menu, select **Presentation State**, then select “**Update Mark Read Presentation State**”.

NOTE

The “**Update Mark Read Presentation State**” menu option will not be available if the “**Allow exams to be marked read more than once**” check box is selected in the “General System Preferences”. See [“Setting General Preferences” on page 471](#).

NOTE

Users will be able to update only the presentations that they had “Mark Read”. It is not possible to update the presentation that was marked read by other users.

DICOM Grayscale Softcopy Presentation States (GSPS)

DICOM Grayscale Softcopy Presentation State (GSPS) studies are supported. IntelliSpace PACS supports the loading and display of GSPS annotations when associated with an image.

IntelliSpace PACS can display annotations (unformatted text value with or without anchor point, poly-line, circle, and ellipse) from any third-party vendor’s GSPS. It is important to note that flipped images or point and interpolated annotations in GSPS will not display in IntelliSpace PACS. Only the aforementioned annotations are supported for display at this time. The GSPS annotations are read-only and cannot be modified or saved. An “AS LAST SEEN” GSPS denotes that it came from a Philips modality. IntelliSpace PACS Administrators with administrative privileges can delete GSPSs to prevent users from viewing them in IntelliSpace PACS. However, this is treated like the Delete function in which images can be recovered.

**WARNING**

- **GSPS may contain clinically relevant data (such as measurements), which may display incorrectly or not at all. This could cause a misdiagnosis or a delay in treatment.**
- **If an error is discovered within the GSPS, a warning icon displays that indicates all GSPS content may not be displayed.**
- **When multiple third-party GSPS are received, IntelliSpace PACS displays the most recent one first, because no priority information is available. This may mean that other Presentation States are not displayed by default, so the chronology may be affected, possibly leading to misdiagnosis.**

When displaying GSPS in the IntelliSpace PACS Radiology, the GSPS displays True Size on the monitor. In doing so, some of the image may be offscreen, but appear complete. Or, GSPS may provide instructions to display only a portion of the GSPS in True Size, while offscreen data may display pathology or other data that could affect the diagnosis.

Note the following:

- The thumbnail in the rack may display the full image, where you would see the arms and chest, even if only the chest fits on the diagnostic monitor in True Size.

- An image in True Size on a diagnostic monitor can be panned to see edge content.
- There is a visual indicator on the thumbnail that displays a square, which indicates what is being shown of the image on the monitor.

The following table lists the modules supported for display of GSPS objects. When IntelliSpace PACS receives GSPS from a non-IntelliSpace PACS source, these are the supported modules.

Module	Supported?	Note
Presentation State Identification	Yes	
Presentation State Relationship	Yes (partial)	
Presentation State Shutter	No	
Presentation State Mask	No	
Mask	No	
Display Shutter	Yes (partial)	
Bitmap Display Shutter	No	
Overlay Plane	Yes (partial)	
Overlay Activation	Yes	
Displayed Area	No	
Graphic Annotation	Yes (partial)	
Spatial Transformation	Yes	
Graphic Layer	Yes	
Modality LUT	Yes (partial)	
Softcopy VOI LUT	Yes	Only direct WW/WL is supported
Softcopy Presentation LUT	Yes	For example, Invert
SOP Common	Yes (partial)	

When IntelliSpace PACS exports GSPS to a non-IntelliSpace PACS source, these are the supported modules:

Module	Supported?
Presentation State Identification	Yes
Presentation State Relationship	Yes (partial)
Presentation State Shutter	Yes
Presentation State Mask	No
Mask	No
Display Shutter	No

Module	Supported?
Bitmap Display Shutter	No
Overlay Plane	Yes (partial)
Overlay Activation	Yes
Displayed Area	Yes (partial)
Graphic Annotation	Yes (partial)
Spatial Transformation	Yes
Graphic Layer	Yes
Modality LUT	Yes (partial)
Softcopy VOI LUT	Yes (partial)
Softcopy Presentation LUT	Yes (partial)
SOP Common	Yes (partial)

When a GSPS is available for a study, the GSPS label is added to the Presentation State menu. Note the following:

- The GSPS automatically loads only when there is no Radiologist, Dictation, or Technologist presentation state. These presentation states take precedence over GSPS.
- If IntelliSpace PACS cannot support annotations in a GSPS, the GSPS will not be loaded and an audit message will be created.
- You can create new annotations on top of GSPS annotations, and save newly created annotation in an IntelliSpace PACS presentation state.
- You cannot edit or delete annotations loaded from a GSPS, because they are read only. (This also applies if the annotations loaded from a GSPS are saved in an IntelliSpace PACS presentation state.)



WARNING

An image artifact may appear when a Modality LUT or a mask is applied to a sub-sampled image. The sub-sampled image means that the image data is not fully retrieved from the server and, therefore, not displaying at full resolution. Diagnosis should only occur on images that are displayed at full (100%) resolution. If images are displayed at full resolution, no artifact should appear.

Using Conference Presentation States

In addition to System Presentation States, you can create, edit, save, and delete Conference Presentation States for activities such as training, conference, and review rounds. A Conference Presentation State can contain a sequence of up to 20 Presentations, allowing you to present a comprehensive overview of a patient care process to other physicians during clinical conferences.

When you load a Conference Presentation State, the monitors are configured and images are displayed in the same way that they were saved, including any image manipulations (Window Width/Level, zoom, pan, flip, rotate, annotations, measurements, series rack order, reviewing image position in monitor layout, and so on). You can mark an exam read while reviewing a Conference Presentation State.

If you need to leave in the middle of a clinical conference and want to return to the Conference Presentation State at a later time, you can use the **Save** feature. When you save a Conference Presentation State for the first time, you give it a name and specify whether you want to save it to the exam (as part of a System Presentation State, which is the default display), save it to a folder, or both. When you edit and re-save a Conference Presentation State you can also rename it if desired.

NOTE

If you display CAD markers in any hanging protocol sequence or Conference Presentation State, the CAD markers continue to be displayed for the entire sequence. Likewise, if you hide CAD markers in any hanging protocol sequence or Conference Presentation State, the CAD markers continue to be hidden for the entire sequence.

The following settings are saved and displayed for each frame of a Conference Presentation State sequence:

- Image Rotations and Flips
- Window width and center values
- Measurements and annotations
- Key Images
- Window inverted yes/no
- Measurement calibration information (row and column pixel spacing)
- Cloned windows and their window width and center values
- Order of the windows in an exam
- Monitor layout and hanging protocol
- Image within stack that is currently displayed
- Zoom Factor
- Pan Offset

- Image Processing settings
- Collections

NOTE

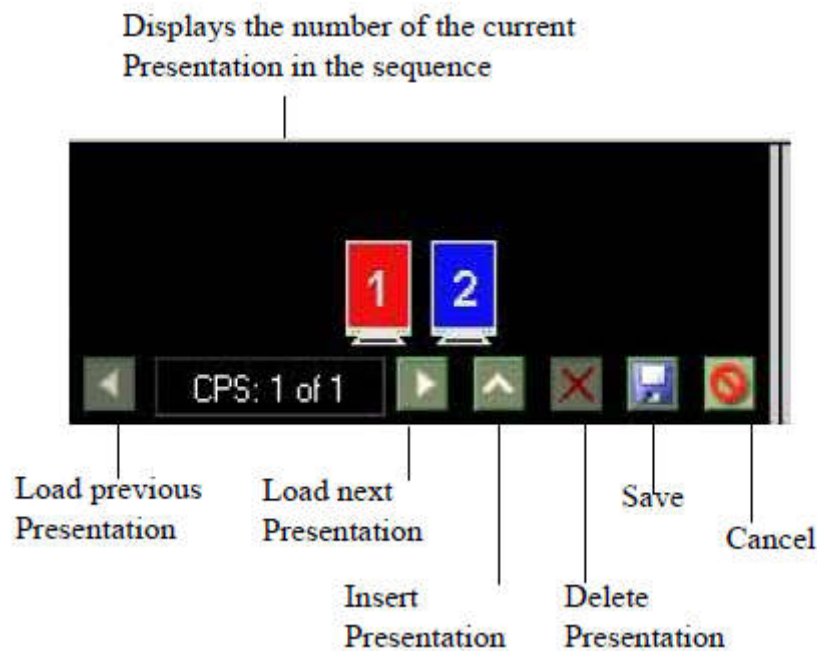
Zoom Factor, Pan Offset and Image within stack settings saved are for diagnostic monitors and not for popup windows.

See the following sections:

- [“Creating and Saving a Conference Presentation State” on page 233](#)
- [“Editing and Saving a Conference Presentation State” on page 235](#)
- [“Deleting a Conference Presentation State” on page 237](#)

Creating and Saving a Conference Presentation State

1. Open the exam.
2. Right-click in the Exam Margin and select **Presentation State**, then **Create Conference Presentation State**. The Edit/Create Conference Presentation State toolbar is displayed in the monitor icon area.



3. Set up the first Presentation of the Conference Presentation State, including annotations, Window Width/Level, and so on.
4. Click the **Next** (right) arrow to create the second Presentation.
5. Continue to add the desired Presentations. You can add up to 20 Presentations in a Conference Presentation State.

6. When you are finished, click the **Save** icon to name and save the Conference Presentation State. To cancel without saving, click the **Cancel** icon. When you click the **Save** icon, the **Save Conference Presentation State** dialog box opens.



7. Enter a **Presentation State Name** for the Conference Presentation State. While entering the name for the Conference Presentation State, ensure to use only the characters listed in the table **Characters Supported for Conference Presentation Name** below.
8. Specify whether you want to **Save to Exam (System CPS)**, **Save to Folder** or **Save to Both**. If you specify **Save to Folder** or **Save to Both**, navigate to the desired folder.
9. Click **OK**.
- The toolbar changes to the Display Conference Presentation State toolbar (to allow you to navigate to Presentations within the Conference Presentation State).
 - The username, date, and time are saved as part of the Conference Presentation State.
 - If you saved the Conference Presentation State to a folder only, it only displays in the folder.

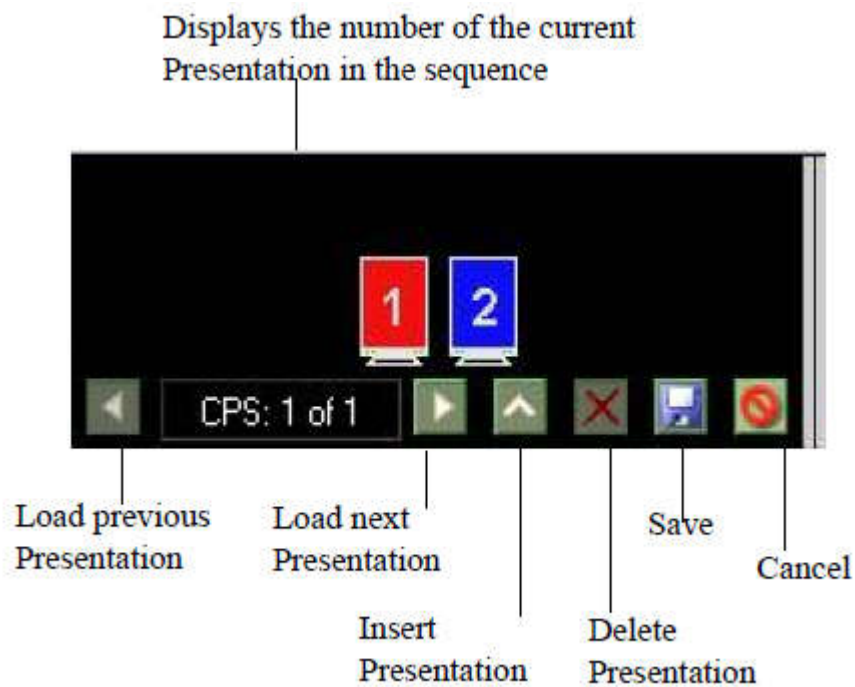
Icon	Description
	The Conference Presentation State has been saved only to the folder, not the exam.
	The Conference Presentation State has been saved to both the exam and the folder.

Characters Supported for Conference Presentation Name

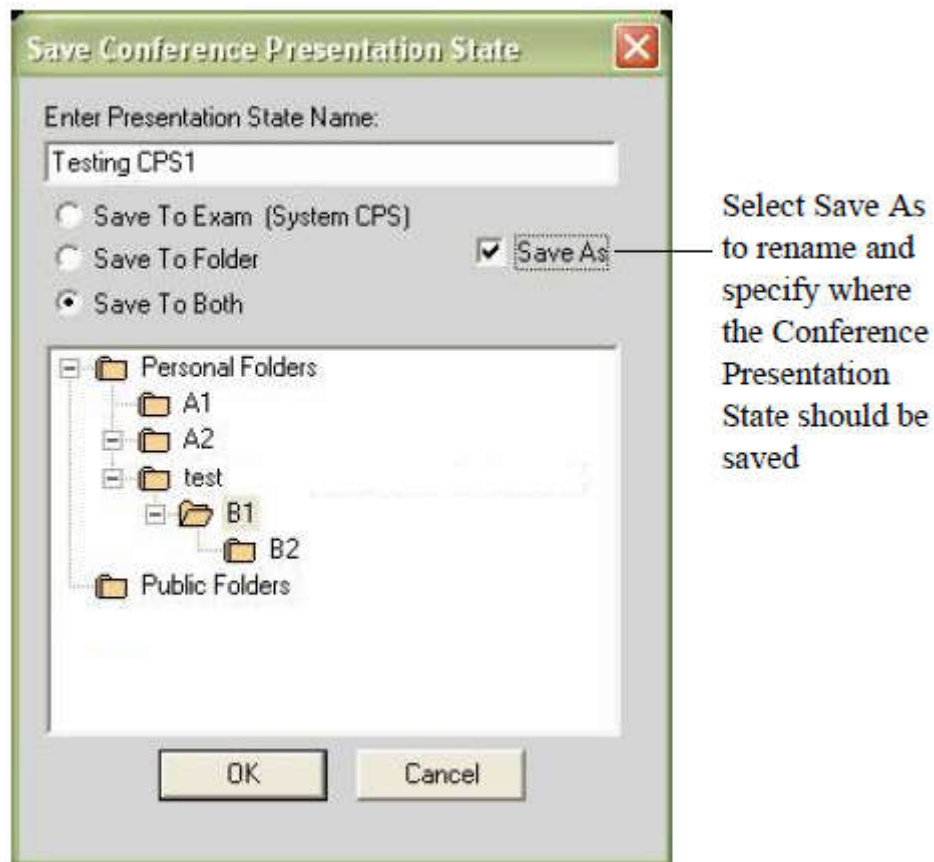
Supported Characters		Supported Characters		Supported Characters	
(space)	0	@	P	`	p
!	1	A	Q	a	q
"	2	B	R	b	r
#	3	C	S	c	s
\$	4	D	T	d	t
%	5	E	U	e	u
&	6	F	V	f	v
'	7	G	W	g	w
(	8	H	X	h	x
)	9	I	Y	i	y
*	:	J	Z	j	z
+	;	K	[	k	{
,	<	L	/	l	
-	=	M	]	m	}
.	>	N	^	n	~
/	?	O	_	o	

Editing and Saving a Conference Presentation State

- Open the Conference Presentation State you want to edit. Depending on how the Conference Presentation State was saved, you can either open it from a folder or from the Canvas Page.
 - To open it from a folder, navigate to the Conference Presentation State in the Folder List and double-click on the Conference Presentation State.
 - To open it from the Canvas Page, right-click in the Exam Margin and select **Presentation State**, then select the Conference Presentation State.
- Right-click in the Exam Margin, select **Presentation State**, then select **Edit Conference Presentation State**. The Edit/Create Conference Presentation State toolbar is displayed in the monitor icon area.



3. Make the desired edits to the Presentations in the Conference Presentation State.
 - Use the Insert and Delete buttons to add or delete Presentations, respectively.
 - Change the annotations, Window Width/Level, or other settings if desired.
 - Click on **CPS: x of x** to display a list of the Presentations in the Conference Presentation State. Drag and drop to reorder if desired.
4. When you are finished, click the **Save** icon to save the edited Conference Presentation State. To cancel without saving, click the **Cancel** icon. When you click **Cancel**, any edits are retained until the Conference Presentation State is reloaded and IntelliSpace PACS goes into Conference Presentation State display mode.



5. Do the following:

- Rename the Conference Presentation State if desired.
- To specify a new folder or other Save options, select the **Save As** check box, enter a new name, and specify where you want the edited Conference Presentation State saved.

NOTE

If the original Conference Presentation State was saved to a folder and exam, these areas in the Save Conference Presentation State dialog box are disabled.

Deleting a Conference Presentation State

Do one or both of the following:

- ▶ From the Folder List, navigate to the folder that contains the Conference Presentation State you want to delete. Right-click and select **Delete**.
- ▶ Open the Conference Presentation State you want to delete, right-click in the Exam Margin and select **Presentation State**, then select **Delete Currently Loaded Conference Presentation State**.

NOTE

If you saved the Conference Presentation State to both the folder and to the exam, deleting the Conference Presentation State from the folder does not delete it from the exam. Likewise, if you delete the Conference Presentation State from the exam, it will not be deleted from the folder.

Working with Collections

A collection is defined as a grouping of series or images from the same exam that are selected and assembled either by IntelliSpace PACS upon user definition and preference (auto stacking), or manually by the user when working in IntelliSpace PACS Radiology. Stacking refers to the process of making a collection, i.e., stacking one or more series upon another to form a collection.

NOTE

Collections are not supported in IntelliSpace PACS Enterprise, Media Export and iExport.

A collection can be reversed by splitting it again into its original contents of separate images. Splitting a collection results in the original arrangement (before the collection was created). See [“Removing a Collection” on page 243](#).

There are two main reasons for wanting to create a collection:

1. A modality might send a series of images that are easier handled as stacks, in which case all the images in an examination can be collected together.
2. There may be a varying number of images in two different examinations that are compared, in which case images of the same type are collected to make comparison easier; i.e., images of the same type are placed in the same collection.



Collections are always marked with a collection symbol in each image of the collection.

Note the following:

- A collection of images can only be made with images from the same modality that has the same bit depth and the same number of rows and columns.
- Images of different matrix size must be auto-zoomed to fit the window when stacked. This may happen frequently with RF images.
- The zoom behavior of a collection created manually is as follows:
 - Single images zoom individually
 - Series zoom as a series, such that when one image from a series that was dropped into a collection is zoomed, all images in that series zoom as well.
- You cannot add the same series or image to more than one collection.

- You cannot drag key images to create or add to a collection. The key images are not marked with a color border even if the key images belong to a series that is part of a collection.
- You cannot drag individual images out of a stack into a collection.
- Collections can only be formed from images belonging to one exam.
- A collection behaves the same way as an IntelliSpace PACS stack with respect to feature propagation, such as WW/WL, invert, zoom/pan, and graphics behavior.
- The presentation state of all collected images remains unchanged by the collection action; for example, flip remains flip and annotations are kept.
- Presentation State changes made to a series in a collection are kept in sync in the collection. These changes will persist in the original series when added to a collection or removed from a collection.
- When collected, images in a collection are zoomed fit-to-window until you manually manipulate the pan and zoom settings, or pan and zoom settings are applied from a Conference Presentation State.
- A collection cannot be hung as part of a Hanging Protocol. You must manually hang a collection, or it is hung based on the application of a saved Conference Presentation State.
- Pan and Zoom changes to a series in a collection affect only the images within that series. The Pan and Zoom changes do not propagate to other series in the collection.
- Settings other than Pan and Zoom do propagate to the series in a collection similarly to how they are propagated to images within a series. Therefore, if a state is propagated to all images in a stack, then it is propagated to all series in the collection. Conversely, if a state is not propagated to all images in a series, then it is not propagated to other images or series in the collection.
- Multi-Image Mode is applicable to stack series within a collection when the collection is hung on a monitor or displayed in a pop-up window. See [“Setting Configuration Options” on page 369](#) in the Hanging Protocols chapter.
- Once a collection has been created by a user and saved in a Conference Presentation State, IntelliSpace PACS will present that exam to any subsequent user as a collection by default, until the collection is split again.
- Collections are shown on the canvas page, can be hung on diagnostic monitors (similar to hanging protocols), and can be navigated and manipulated as a stack.

Creating a Collection Manually

1. Log into IntelliSpace PACS Radiology and open an exam in the canvas page.
2. Hold down the **Ctrl** key while using the mouse to drag the series or images that are intended to form the collection onto each other. As each series drops, the dragged image is placed last in the collection.

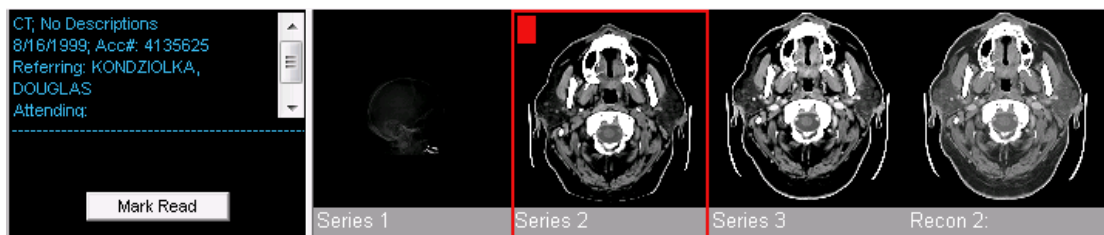


Fig. 34: View of images on the canvas before creating a collection. Note there is no color border around each series.



Fig. 35: View of images on the canvas after creating a collection. The collection is now displayed first on the image rack in front of the original series. Note the color border around each series, including the collection.

Note the following:

- The collection is denoted by the collection icon in the lower left corner of the thumbnail, as well as the collection number (Col 1 in Fig. 12.2), and the number of images in the collection (1/59 in Fig. 12.2).
- The collection moves in front of the first series on the image rack. You cannot re-order the collection placement on the exam rack by dragging the collection to a new position.
- The series that have been dragged into a collection stay on the canvas page but are designated as part of the collection with a unique colored border. If there are several collections for the same exam, each collection has a unique color border. In addition, the collection numbers are continuous. Removing a collection from an exam causes renumbering of the remaining collections for that exam.

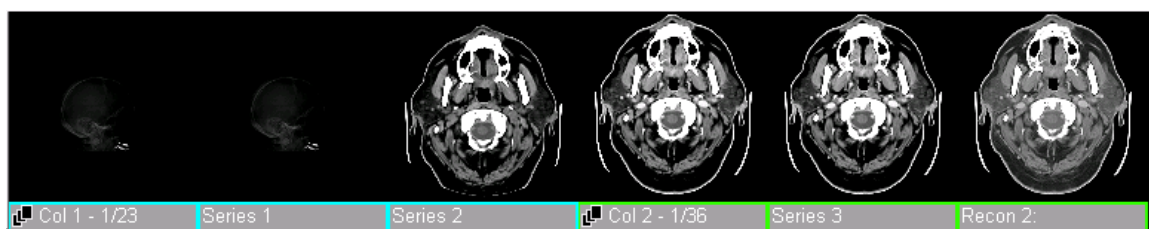


Fig. 36: View of 2 collections with different color borders for each.

- Other collections can be added to an existing collection, but they must be part of the same exam. You cannot drag a collection from one exam onto a collection for another exam.
- The minimum number of series in a collection is two. Manual and auto creation of collections with less than two series is not allowed.
- The maximum number of collections that can be created for an exam is six. If you try to manually create more than six collections for an exam, you will be prompted that the maximum number of collections has been reached.

- You cannot **Ctrl + Drag** a series that is already part of one collection to a second collection to add to the second collection, or to drop on another series to create a new collection.
- When collections are dragged onto other collections, the color of the first collection created is primary and all associated images get the same colored border.

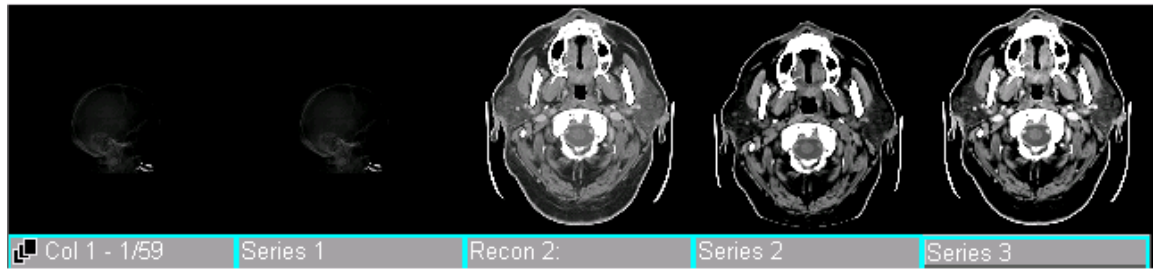


Fig. 37: 2 collections combined into 1 collection. The 2 color borders shown in Figure 15.3 are now 1 color, the same color as the original Collection 1.

NOTE

- The maximum number of images that can be added to a collection is 20000 images for a series.
1. Repeat Step 2 until all desired images have been placed in the collection. A new collection of the images that have been dragged together is created.



WARNING

When viewing a collection that has been saved as a Conference Presentation State, make sure you are viewing all of the series in the collection window, especially if you have multiple collection windows open on the Exam Rack. Note the color code for each collection and whether a scroll bar is present, as it indicates there are more windows displayed on the Exam Rack. Failing to view all series within a collection may mean that you have missed images, which could lead to a misdiagnosis or delayed patient treatment.

Saving a Collection

You can only save a collection as a Conference Presentation State. When a collection is saved as a Conference Presentation State, it saves the state of the current collection, including the monitor on which the collection is hung. See [“Saving a Presentation State” on page 228](#).

Adding to a Collection

1. After creating a collection and while still in the canvas page, right-click an image or series that is not part of a collection.
2. From the menu, select **Collection** and then click **Add to Collection <number>**.

3. That image or series now displays on the canvas with the same color border as the collection.
- OR -
1. **Ctrl + Drag** a series onto an existing collection, which adds that series to the end of the collection.

Adding a Collection to a Collection

You can **Ctrl + Drag** a collection onto another collection to add all the series from the source collection to the end of the target collection. The target collection is removed after you are finished, as the source collection and target collection are now one source collection.

– OR –

You can right-click a collection, select **Collection** from the menu and then click **Add to Collection <number>**.

Removing a Series from a Collection

You can remove a series from a collection.

1. Right-click a series that is part of a collection.
2. Select **Collection** from the menu and then click **Remove from Collection**.

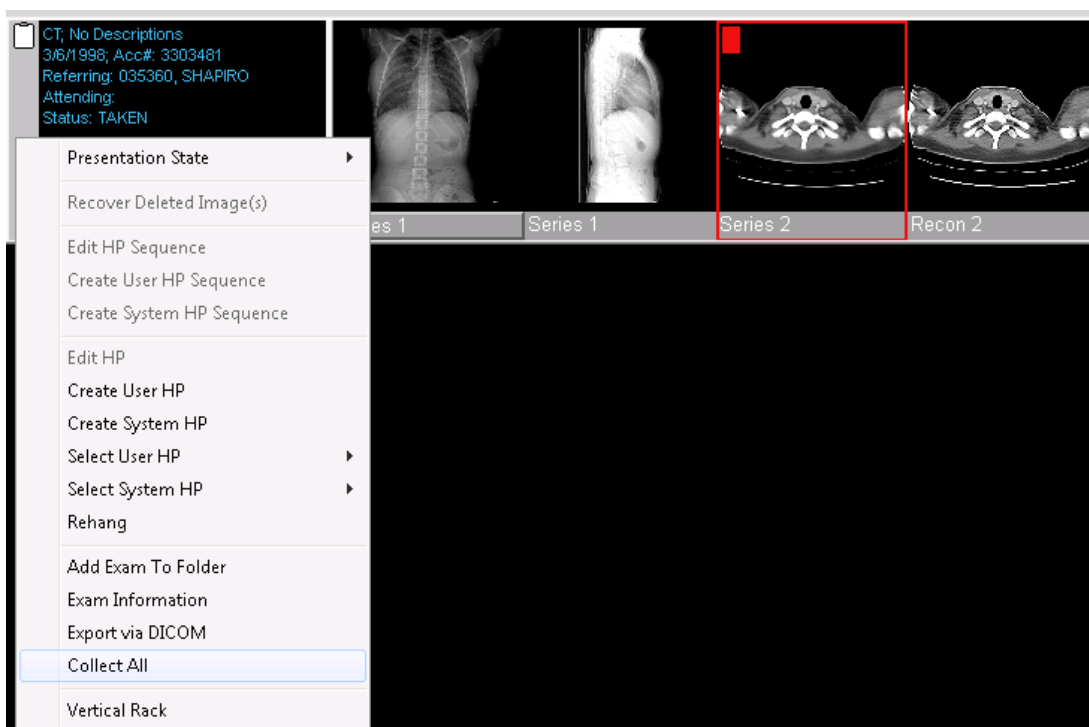
NOTE

The “Remove from Collection” menu item is disabled if the collection to which the series belongs only consists of two series.

Creating a Collection of All Images in an Exam

You can use the Exam Margin right-click menu to collect all of the series in an exam into a single collection. If the exam already has collections, you are notified that the **Collect All** action will remove all existing collections.

1. Log into IntelliSpace PACS Radiology and open an exam in the canvas page.
2. Right-click in the exam margin.
3. From the pop-up menu, select **Collect All**.



4. A collection of all images that can be collected is shown on the canvas page, except for the key image stack, which remains untouched.



Results of Collect All in
the canvas page

NOTE

The Collect All command collects everything regardless of differences in matrix size, pixel depth, and so forth. However, the stack of Key Images will not be collected.

Removing a Collection

1. In IntelliSpace PACS Radiology, right-click a collection in the canvas page.
2. Select **Collection** in the menu and then click **Remove collection**.

3. The images in the collection are split up as originally displayed on the canvas before the collection was created.

Auto Collection

When an exam is opened and it matches one of the specified DICOM Sources preferences for which Auto Collection has been enabled, then the canvas page collects all of the matching series that belong to that exam into a single collection window on the Exam Rack. See [“Setting DICOM Sources Preferences” on page 478](#).

Auto collection during the opening of an exam is done only if the Presentation State being applied is not a Conference Presentation State. Otherwise, the collection state as stored in the Conference Presentation State is applied.

Working with CAD Markers

IntelliSpace PACS Radiology supports CAD (Computer-Aided Detection) displays (from R2 and iCAD systems) that display marks for calcifications and masses. These markers can be toggled on and off via a configurable shortcut or a menu option. They can also be deleted if you have the proper permission.

CAD markers are displayed as a solid black line on the outside and a white line on the inside, making them visible if the image is black-on-white or white-on-black.



WARNING

Diagnostic decisions should not be made based solely on the information presented by the CAD marker. CAD markers should be used in conjunction with an independent read from a radiologist.

NOTE

If you display CAD markers in any hanging protocol sequence or Conference Presentation State, the CAD markers continue to be displayed for the entire sequence. Likewise, if you hide CAD markers in any hanging protocol sequence or Conference Presentation State, the CAD markers continue to be hidden for the entire sequence.

Showing or Hiding CAD Markers

When CAD markers are available for an image, the **CADSR** menu option is displayed in the exam margin. You can select and deselect this menu option to show or hide CAD markers. They are hidden by default when the image is first displayed.

To toggle the CAD markers, do one of the following:

1. Use the keypad: **Toggle CAD Markers**.



2. Right-click in the Exam Margin, choose **CADSR**, and select **Display CAD markers**.

The label displayed at the bottom of the image refreshes as you toggle the CAD markers: **CAD Markers On** or **CAD Markers Off**.

By default, CAD makers are not displayed when viewing presentation states, conference presentation states, hanging protocols, hanging protocol sequences, or original DICOM.

You can also show or hide CAD markers on an image using a configurable keyboard shortcut. The default keyboard shortcut is **Shift-S**, but you can change this if desired. See [“Setting Keyboard Shortcut Preferences” on page 456](#).

NOTE

- The different shapes of the CAD markers of CAD vendors are preserved and displayed.
- When zoom is applied to an image, the CAD markers are resized by the same zoom factor.
- CAD markers remain visible after an image has been inverted.
- To display the CAD finding data, click on the CAD marker. The CAD finding data is displayed at the top of the screen.
- CAD markers are not shown in the Magnifying Glass.
- CAD markers are not included when you copy images to a CD or other media using the Media Viewer

Deleting CAD Markers

- From the exam margin, select **CAD Markers**, then select **Delete Currently Selected CADSR**.

NOTE

Deleting the currently selected CADSR deletes the CADSR object which contains the CAD markers and, if present, the breast density data.

Breast Density Data

IntelliSpace PACS can display breast density data, including data obtained from spectral measurements. The breast density data is displayed as an overlay on each image. Typically, the breast density data differs per image laterality.

If the CADSR data of the selected exam includes breast density data, the latest calculated results are displayed. To view other breast density data:

- Right-click in the Exam Margin and select Breast density, then select an item from the list.

NOTE

The breast density data is also available within IntelliSpace Clinical Applications. This data is included automatically in the evidence report.

Delete Breast Density Data

Right-click in the Exam Margin and select Breast density, then select Delete Currently Selected CADSR.

NOTE

Deleting the currently selected CADSR deletes the CADSR object which contains the CAD markers and, if present, the breast density data.

Using Key Images

Key images are images you mark as “key.” They are archived and displayed as a component of presentation states and can be marked as key for a variety of reasons, including improving referring physician access by providing a way to focus on the most pertinent images in a study, for teaching files, consultation, and image quality issues.

Key images are identified by the text message “Key” at the lower-left corner of the image. When a measurement or annotation is added to an image, that image automatically becomes a key image.

- Press the spacebar while the mouse is over the desired image to make the image a key image. When you press the spacebar again, the image will no longer be a key image.
- Press the Tab key to cycle forward through all the visible key images and **Shift+Tab** to cycle backwards.
- You can also right-click on the desired image and select **Key Image** to make the image a key image. When you right-click on the image and select **Key Image** again, the image will no longer be a key image.

Key Image Series

The Key Image Series option (set in User General preferences) lets you place all key images in a series at the beginning of each Exam Row. The last key image is displayed on the top. Key images are used as a reference; cine loop and other features are not available for key images.

The key image series is located to the left of the exam images when the Exam Rack is viewed in horizontally and directly above the exam images when the rack is viewed vertically.

You can double-click a Key Image Series to open a key images popup window. See [“Using the Key Image Popup Window” on page 247](#). You can set a User preference to display the key image series at the beginning of each exam rack. See [“Setting General Preferences” on page 471](#).

The image manipulations options are displayed in the same way in the Key Image Series as on the exam image, except for Scout lines.

You navigate through a Key Image Series as follows:

- Use the mouse wheel or the arrow keys to cine through slices.
- Press the **Tab** and **Shift+Tab** keys to cycle through the series.

The Key Image Series updates in real time. As you mark images in the exam as “Key Images” by pressing the spacebar, the Key Image Series is populated simultaneously.

Using the Key Image Popup Window

The Key images popup window provides access to all key images of an exam, and includes more image manipulation features than are available for key images in the Exam Rack.

You can display key images on your diagnostic monitors by dragging the Key Image popup window from the Canvas Page into the diagnostic monitors.

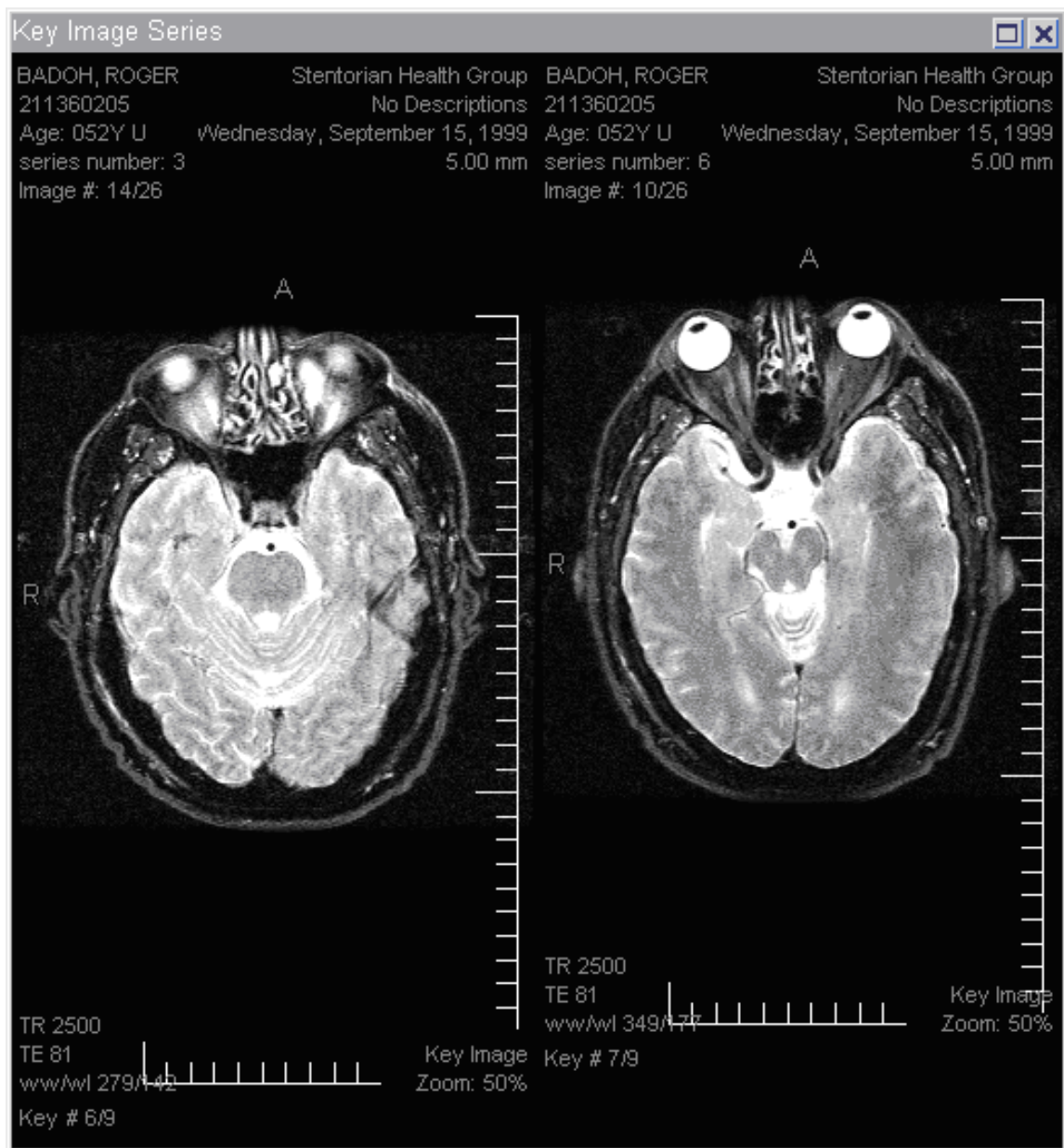


Fig. 38: Key Image popup window example

Right-clicking in a Key Image Series popup window displays a menu with the following options:

- **Window Width/Level:** See [“Setting the Window Width/Level”](#) on page 259
- **Measurements:** See [“Using the User Tool Palette”](#) on page 291
- **Annotations** (excluding **Spine Labeling**): See [“Annotating Images”](#) on page 320
- **Image Processing:** See [“Image Processing”](#) on page 267
- **Scout Line Mode:** See [“Using the Scout Tool”](#) on page 274
- **Localizer Mode:** See [“Using the Localizer Tool”](#) on page 275
- **New Link:** See [“Linking Image Series”](#) on page 249

- **Save:** Saves the image (in full resolution) or window (what is currently visible) to the clipboard or a file. Supported image formats are BMP, TIFF, JPEG, PNG, or GIF.
- **Print > To Paper Printer:** See [“Printing to Paper” on page 346](#)
- **Print > To DICOM Printer:** See [“Printing to DICOM” on page 347](#)
- **Flip/Rotate:** See [“Flipping an Image” on page 283](#) and [“Rotating an Image” on page 283](#)
- **Zoom Presets:** Allows you to select a preset zoom factor of **Fit to Window**, **100% (Original Size)**, **True Size**, **200%**, **300%**, **400%**, or **1600%**.
- **Magnifying Glass:** See [“Using the Magnifying Glass Tool” on page 278](#)
- **Series Matching Rules:** See [“Series Matching Rules” on page 401](#)
- **Multi Image Mode:** Lets you choose how you want to display stack images in Multi-Image mode in the Key Image Series popup window.
- **Delete All Measurements and Annotations** (when measurements and annotations are present): See [“Annotating Images” on page 320](#)
- **IntelliSpace PACS Workflow Layer:** If it is installed on your system, you can launch Critical Findings, ED-RAD Discrepancy or Peer Review. See the IntelliSpace PACS Workflow Layer documentation for more information.
- **MPR / MIP / Volume Rendering:** See [“About IntelliSpace Volume Vision” on page 329](#)
- **Philips Applications:** Selecting one of the following applications—Volume Vision, CT Colonography, CT Pulmonary Emboli, Vessel Explorer—opens that application. See the chapter [“Philips IntelliSpace Clinical Applications” on page 329](#)

Linking Image Series

The Link feature allows you to do the following:

- Synchronize multiple images or series with an image or series that you have designated as the “master”.
- Multiple Linking between Main and Priors images.
- Link two or more images and zoom, pan, or view slices simultaneously.

NOTICE

For CT and MR images, during the reading process, different series with different orientations can be linked. For example, axial-axial, axial-oblique, sagittal-oblique, coronal-oblique, etc.

- Manually create a link, join a link and unlink image series as required, to manage the representation of the current and prior studies

- Link cloned or expanded windows of stacked series of the same imaging plane by dragging their respective popup windows together on the same monitor to snap them together. This option is available only in IntelliSpace PACS Enterprise and is not available in the IntelliSpace PACS Radiology.

When linking is activated, the following functions affect all linked images:

- Window Width/Level. See [“Setting the Window Width/Level” on page 259](#).
- Zoom. See [“Zoom Presets” on page 276](#) and [“Using the Step Zoom Tool” on page 279](#).
- Pan. See [“Panning Around an Image” on page 282](#).

You can create the following types of links:

- Axial
- Sagittal
- Coronal
- Oblique
- Mirrored

Note the following

- A series is considered to be Axial, Sagittal, or Coronal if it is oriented within 5-degrees of the true plane corresponding axis.
- A series is considered to be oblique if (1) It is not within 5-degrees of one of the major axes (Axial, Sagittal, Coronal) or (2) It contains images of different orientations such that they are not all aligned with the same axis.

The following link options are available:

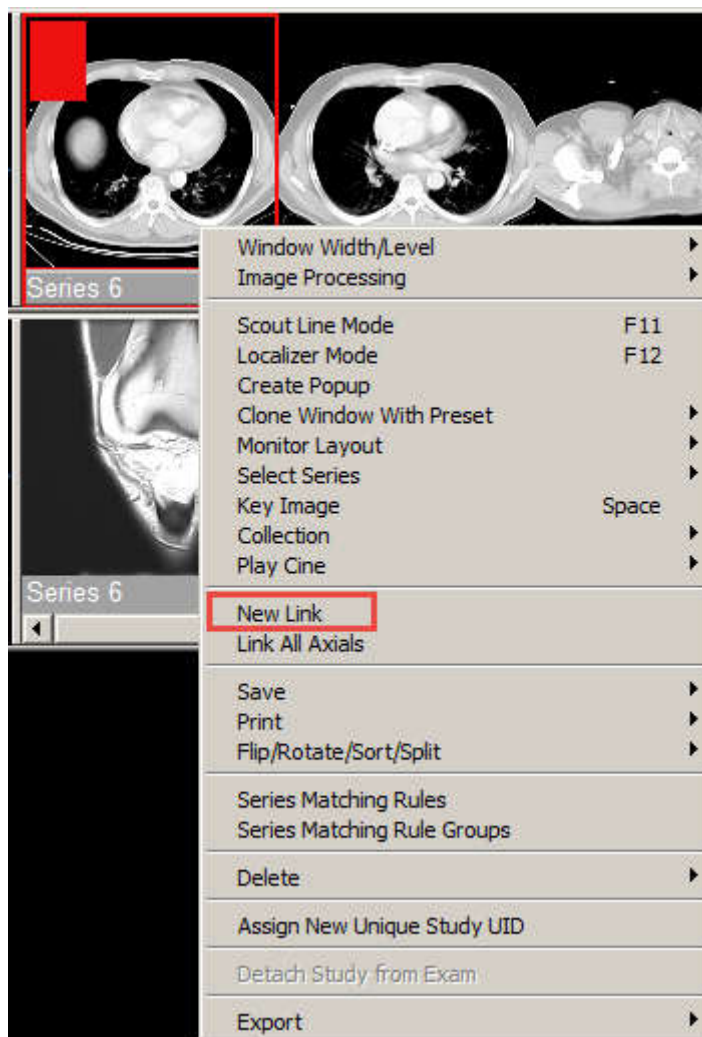
- Linking single images, such as CR or DR images, in one or multiple exams with the same modality type. (For example: linking a CR Chest AP image of a new exam with a CR Chest AP image from a prior exam.)
- Linking single images, such as CR or DR images, in one or multiple exams with different modality type. (For example: linking a CR Chest AP image with a DR Chest AP image from a prior exam.)
- Linking series, like CT or MR series, with the same orientation in one or multiple exams with the same modality type. (For example: linking all axials in CT Chest exam that contains multiple axial series.)
- Linking series, such as CT or MR series, with the same orientation in one or multiple exams with different modality types. (For example: linking a CT Brain axial series of a new exam with a MR Brain axial series of a prior exam.)
- Linking different series, like CT or MR, with different orientation in one or multiple exams with different modality types. (For example: linking a MR shoulder axial series with a MR shoulder oblique series.) This option is not applicable for Tomo and Mammo images.
- Linking mammography (MG) images using mirrored linking.

The Link feature lets you synchronize multiple images or series with an image or series that you have designated as the “master.” Synchronize means that IntelliSpace PACS tries to do the following:

- Apply to all linked images the same image “navigation” options that are applied to the master, such as zoom or pan. (Functions such as flip, invert, rotate, and WW/WL remain independent.)
- Line up the images from the linked series with the one currently selected as the master. This lets you page through multiple series simultaneously. The series you page through acts as the master, and all the linked “slaves” display the image in their series that is at the closest location to the master.

Creating Links

1. Right-click on the desired image or series and select **New Link** from the menu.



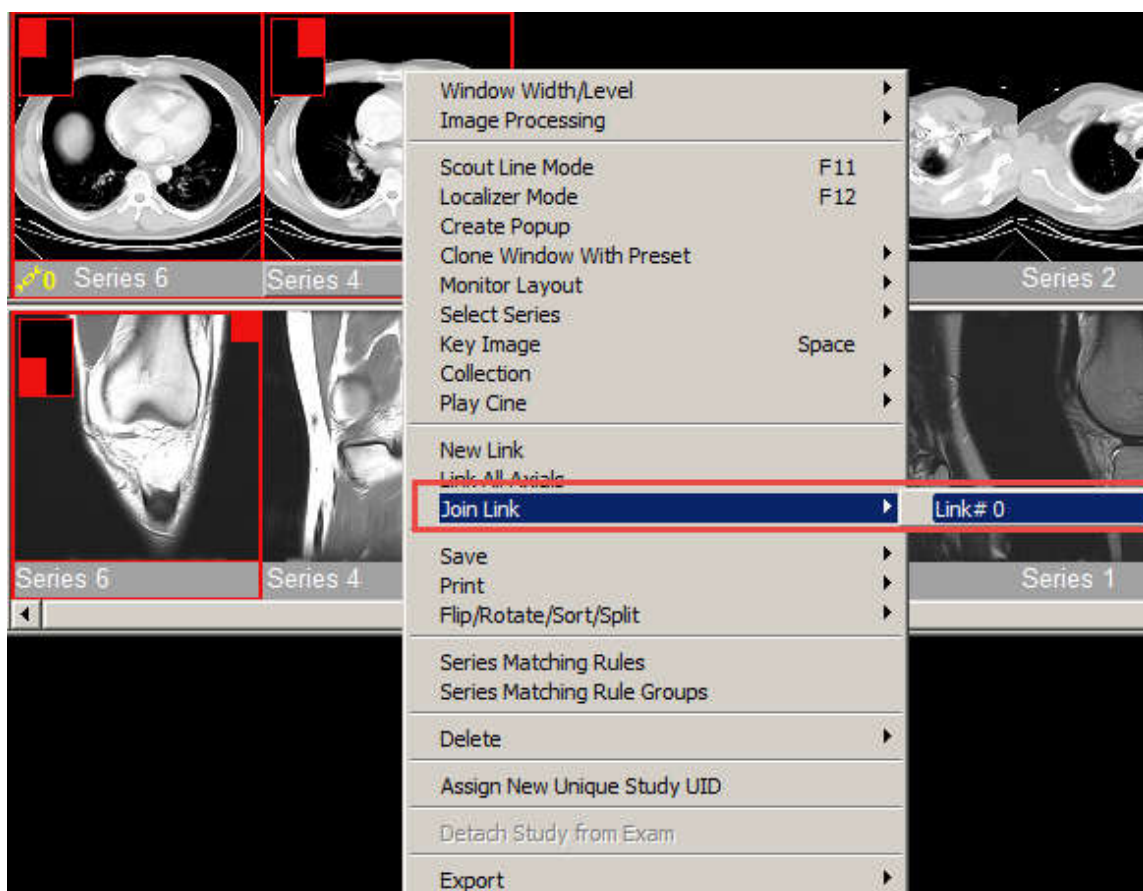
This engages linking and the image is marked with a link identifier. The link identifier helps you to identify the joined links. The link identifier count starts with "0".



The Link Identifier is also available in the diagnostic monitor.



2. To add more images to the link created in the step above, select the image(s) of any orientation, right-click and choose:
 - **Join Link**
 - Select the required link to join from the submenu.



NOTICE

The menu "Join Link Mirror" will also be available for Tomo and Mammo images.

3. To select multiple images or series from different exams, press the **Shift** key while selecting images or series. Right-click and select **Link Selected Images** from the menu.
4. If more than one series in the same exam has the same orientation and the same reference, you can link them all simultaneously by selecting the **Link All Axial**, **Link All Sagittal**, **Link All Coronal**, or **Link All Oblique**, depending on the orientation.
5. You can choose to **Unlink All**, **Leave Link** and **Deactivate all Links** by right clicking on the linked images



CAUTION

The manual linking in the Canvas page is not persisted. When the images are rehung, the settings defined in the Hanging Protocol rule will take effect.

Toggling Links

To manipulate and adjust the images separately, you can temporarily toggle off the links:

- Use the keypad: **Toggle Linking**.



Note that this function only deactivates the effect of the linking; the images remain linked. To unlink the images, see [“Unlinking Images” on page 254](#).

Unlinking Images

Do one of the following:

- To unlink a single image, right-click the linked image and select **Leave Link** from the menu.
- To unlink all linked images, right-click the linked image and select **Unlink All** from the menu.

Activating and Deactivating Links

- Do one of the following:
 - Right-click the image you created the first link for and select **Deactivate All Links** from the menu. This deactivates but does not remove the link.
 - Right-click the image that has a deactivated link and select **Activate All Links** from the menu.

Link Symbols

The following links are displayed on the images as they are linked:

Symbol	Description
	Displayed in image thumbnails
LINK	Displayed in image popup windows
LINK	Displayed in diagnostic monitors if this has been configured in the System preferences.

Aligning Linked Series

DICOM contains information as to the frame of reference, which provides exact information as to the location of the patient at the time of scanning. Typically, images in the same exam have the same frames of reference, and images in different exams have a different frame of reference.

If the linked series have the same frame of reference, IntelliSpace PACS automatically aligns them when the link is created. If the linked series do not have the same frame of reference, IntelliSpace PACS cannot perform the initial alignment automatically. In this case, it relies on the user to align the series before linking them, and then uses information about the slice spacing to synchronize them as you navigate through the series.

You can adjust the initial manual or automatic alignment by temporarily disconnecting a series-image from a link, and manipulating each independently by pressing the **Shift** key while performing mouse or keyboard actions.

Creating Mirror Links

Mirrored links are primarily used for mammography studies. Based on how these images are acquired, mammography studies typically capture bilateral breasts and display images which are positioned sidelong either to the left or right side of image windows.

Mirror linking allows you to link images at opposite coordinates. For example, when you zoom into an image that is positioned along the right side of an image window, IntelliSpace PACS automatically zooms into the other image positioned along the left side of the linked image window.

1. Right-click the first image and choose **New Link** from the menu. This engages linking.
2. To add more images, select those images, right-click and choose the **Join Mirror Link** from the menu.

NOTE

You can set up User and System hanging protocols with linking and mirror linking in page 3 of the Hanging Protocol wizard. See [“Setting Monitor Options” on page 373](#).

When mirror linking is activated, the following functions affect all linked images.

- Step Zoom. See [“Zoom Settings” on page 279](#).
- Pan. See [“Panning Around an Image” on page 282](#).

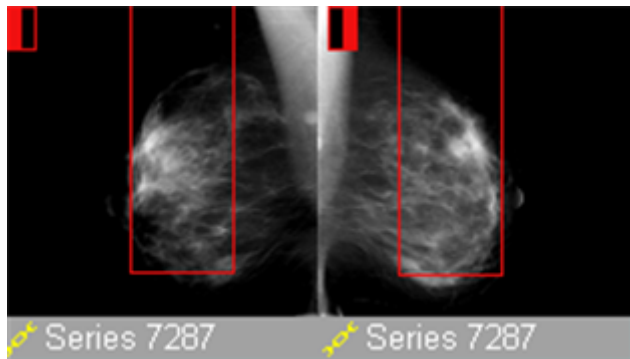


Fig. 39: Image thumbnails showing Step Zoom with Mirror Link

Mirror linking is included in the default Hanging Protocols configured for IntelliSpace PACS.

Linking Warnings



WARNING

General Warning Message

The current implementation of the Link tool allows you to synchronize other windows/series with the window/series you are currently browsing through. In other words, there is one master window/series (typically the one that you have selected with your mouse) and IntelliSpace PACS tries to line up the images of the other linked windows.

Therefore, you should always review each and every series by paging through them individually, and never rely on linking as a way to review all images within a given exam. Browsing through a series that is part of a link may not display all the images that are available in the other linked series.



WARNING

When using the series linking feature, it is possible that images may be missing, which could cause misdiagnosis. Possible causes of missing images are:

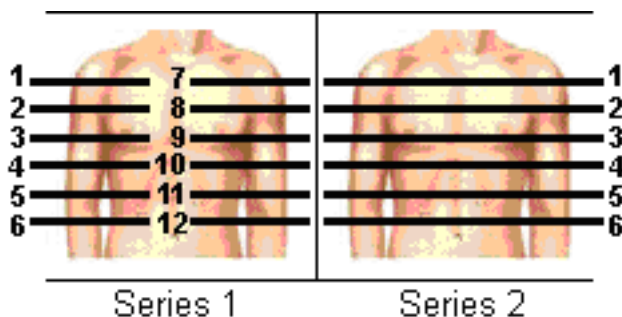
- Linking multiple series with different slice thickness
- Linking series that contain different body parts or cover a larger or smaller region
- Linking Oblique series

**WARNING****Linking a Multi-Phase Series with Another Series**

Multi-phase studies contain multiple images with the same location identifier. Paging through a multi-phase series that has not been split typically results in jumping back to the first slice location each time you reach the end of each phase within the series.

- If a multi-phase series is used as the master, the other linked series are synchronized on location and display the image with closest location to the one displayed in the master series.
- If the non multi-phase series is used as the master, IntelliSpace PACS tries to find the image with the closest location in the multi-phase series, and because there are potentially multiple matches, IntelliSpace PACS displays the best match from the first phase. (In this example IntelliSpace PACS would never display image 7 through 12.)

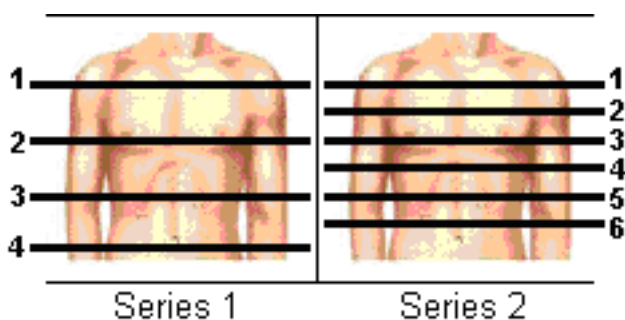
This means that it is not possible to review all images of a multi-phase series by paging through another series while using the Link tool.



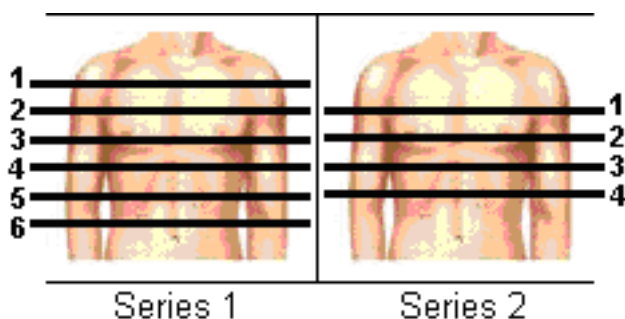
- If a multi-phase series is not split correctly, and a user links multiple series where one of the series contains multiple phases, the link function will not work correctly because not all images will be displayed while paging through the series. IntelliSpace PACS can be configured to automatically split all studies from a particular CT modality in multiple series based on DICOM tag (0021,0012). However, because not all modalities can be configured to provide a unique identifier that can be used for splitting, IntelliSpace PACS provides the ability to manually split studies. A technologist can perform this function and save it as a Presentation State, or a Radiologist can manually split a study after first opening the study.

**WARNING****Linking Multiple Series with Different Slice Thickness**

An exam might contain multiple series acquired at different (or even variable) slice thickness. For example, one series might be acquired at 10mm slice thickness and one at 2mm. If you link these series and page through them using the very thick 10mm series as the master, many images from the 2mm series will be skipped. If you page through the images using the very thin 2mm series as the master, every image of the 10 mm series will be displayed. This means that paging through multiple series simultaneously is possible with the Link tool, but images will be skipped, unless the series with the thinnest slice thickness is used as the master.

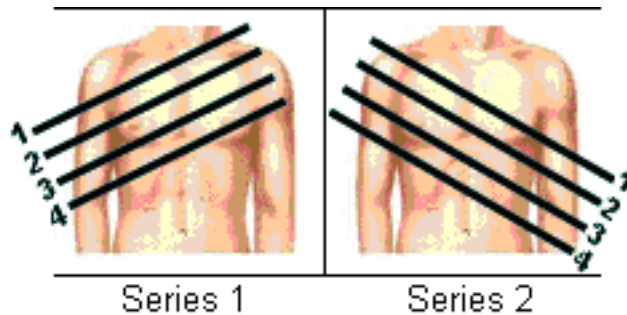
**WARNING****Linking Series that Contain Different Body Parts**

Series that contain different body parts or cover a larger/smaller region of the body can be linked. For example, a CT series that contain a CHEST-ABDOMEN-PELVIS might be linked with a CT series that contains only a CHEST. By navigating through the CT CHEST series, you will never be able to see the ABDOMEN-PELVIS of the other series. Conversely, by using the CHEST-ABDOMEN-PELVIS as the master series, you can look at the CHEST images side-by-side, as well as at the ABDOMEN-PELVIS images of the master series. This means that using the Link tool, you cannot go beyond the scope of the master. This might be obvious if the body parts are totally different like in the CHEST-ABDOMEN-PELVIS example, but sometimes they are the same, but they do not start at exactly the same location. In this case, you might miss a few slices.



**WARNING****Linking Oblique Series**

IntelliSpace PACS allows you to link oblique series. The goal is to provide users with the ability to link oblique series that are more or less in the same orientation. However, IntelliSpace PACS does not prevent you from linking obliques that have totally different orientation. This means that linking obliques that are not of roughly the same orientation leads to unexpected behavior in IntelliSpace PACS.

**Linked Exams Use Case: CT Chest-Abdomen-Pelvis**

When exams are linked before being marked as Read, when the linked exams are marked Read, only one Presentation State is created, because the linked exams were not read separately. Therefore, when a linked exam is opened, a Presentation State may not be applied, which can display incorrect measurements on screen.

For example, consider a Chest-Abdomen-Pelvis series, where three exams are linked and point to the same DICOM Study. Typically, all three exams are read in one dictation session, loading the CT Chest exam from the worklist.

Users that subsequently open either the CT Abdomen or CT Pelvis exam will default back to the original DICOM Presentation State and not see the added value stored under the CT Chest DICOM Presentation State.

Setting the Window Width/Level**NOTE**

When linking is activated, this function affects all linked images. See [“Linking Image Series” on page 249](#).

The **Window Width and Level** settings allow you choose optimal viewing to highlight certain details for better visibility. These options are available when you right-click on an image on the Canvas Page.

- Do one of the following:
 - Right-click on an image and from the menu select **Window Width/Level** and the option you want.
 - Click and hold down the left mouse button while simultaneously dragging your mouse. Drag the cursor horizontally across the image to increase or decrease the window width. Drag the cursor vertically across the image to increase or decrease the window level.

NOTE

When you adjust the Window Width and Level for a series, all slices in that series are affected. To adjust the Window Width and Level on one slice in a series, hold down the “L” key while making the adjustment.

For CTs, the Window Width/Level menus are listed in three separate areas, from top to bottom:

- **Default WW/WL** and **Modality Default** for all exams
- Custom user Window Width/Level values (Abdominal_NAB, Bone_NAB, Brain_NAB, and so on), which are defined in the User preferences. These settings are mapped to the number keys (1 through 9) in the order listed in the **Preferences** dialog box, allowing you to quickly apply a Window Width/Center setting while viewing images. See [“Setting Window Width/Center User Preferences” on page 455](#).
- System WW/WL Presets (Abdominal, Bone, Brain, and so on), which are defined in the **System** preferences. See [“Editing a Window Width/Center Preference” on page 474](#).
- The **Restore Color Image** option displays the current color image or stack of color images in its original form, without applying any window width or level values.



WARNING

The Restore Color Image feature is configured using DICOM Sources to specify the source and modality type of the study. Please exercise caution when using this feature with scanned-in images.

For other modalities, such as CR and MR, the **Window Width/Level** menus are listed in three separate areas, from top to bottom:

- **Default WW/WL**
- **Modality Default** (if defined)
- **Histogram Calculation**

Using the Default WW/WL

The default WW/WL values can be either **Modality Default** values or **Histogram Calculation** values. The Default WW/WL is the same as **Modality Default** when the WW/WL values are provided from the modality. If no Modality WW/WL values are provided, the Default WW/WL values will be the same as **Histogram Calculation** values.

- ▶ Right-click on an image and from the menu select **Window Width/Level** and **Default WW/WL**.

Using the Modality Default WW/WL Values

Modality Default values are the Window Width and Window Level provided by the modality. DICOM sources using DICOM values should be configured for a specific AE Title to ensure that images from other devices are not impacted.

The DICOM modality values are stored in the Window Center tag (0028,1050) and the Window Width tag (0028, 1051).

- ▶ Right-click on an image and from the menu select **Window Width/Level** and **Modality Default**.

Using the Histogram WW/WL Calculation

The histogram is a graph that shows the tone (grayscale value) distribution (total pixel count for each grayscale value) in the image. It maps luminance, which is defined as the way the human eye perceives the brightness of objects. By defining the luminance, the histogram provides the Window Width and Center for the image, instead of the modality.

NOTE

Histogram calculation is not available for the CT modality.

The histogram distributes the range of tone (grayscale value) through categories to provide an image that presents the optimal range of grayscale distribution for an image according to the way the human eye perceives the scale of contrast, by evenly distributing the grayscale values across the possible range of values.

Histograms for low resolution images (for example, thumbnails) are significantly different than histograms for higher resolution images. The window width/level values for these low resolution images may not be suitable. Also, IntelliSpace PACS forces a histogram calculation of the DICOM values if one of the following conditions exists:

- The window width is greater than the pixel range times 2
- The window level is greater than the pixel maximum times 2
- The window level is less than the pixel minimum times 2

The pixels in an 8-bit grayscale image have a contrast (grayscale) value between 0 and 255, where 0 is the blackest at the left end and 255 is the whitest at the right end.

- Right-click on an image and from the menu select **Window Width/Level** and **Histogram Calculation**.

Value of Interest LUT (VOI LUT)

Value of Interest Look Up Tables (VOI LUT) are DICOM values that modalities use to define specific processing algorithms for diagnostic presentation of X-ray images. By default, VOI LUT is not applied to images containing VOI LUT. However, VOI LUT can be applied by default to the images for an entire site when the System Administrator selects the **Automatically apply VOI LUT when available** in the General System preferences. See [“Setting General Preferences” on page 471](#).

The benefits of VOI LUTs include:

- Post-processing corrections for detector defects
- Enhancement of the image by reducing noise
- Altering the dynamic range by a number of methods that improve the visibility of specific pathologies

Value of Interest Lookup Tables (VOI LUT) can be used to enhance different features of the image (for example, “bone” versus “lung” versus “soft tissue” on a chest radiograph). Because the acquisition device might have already performed this processing, a VOI LUT may be used to provide alternative presentations of the **Window Width/Level** of an image.

VOI LUTs are used primarily with CR/DR images extracted from the DICOM tag (0028,3010). This tag can reference one or more VOI LUTs associated with an image. Images can contain single or multiple VOI LUTs.

NOTE

If the DICOM header is missing a LUT, a default LUT is used. This prevents an incorrect LUT from being applied, as an image’s gray values may not correctly display.

When VOI LUTs are applied, IntelliSpace PACS adds an additional VOI LUT option with “(VOI LUT name)”. If VOI LUT is applied, the user can still adjust the image gray scale with the mouse. If modified, the VOI LUT name changes and “MOD” is added, where “MOD” indicates that the original VOI LUT has been modified.

While you right-click, the **Window Width and Level** options in the menu are replaced by VOI LUT Options when VOI LUT is enabled. The image can still have Window Width and Level adjusted on top of the VOI LUT presentation. The modified VOI LUT is preserved when you save a presentation state of the exam. VOI LUT menu options can include:

- **Disable VOI LUTs:** If VOI LUT applied
- **Restore Default Settings:** If VOI LUT is applied and you modified the WW/WL setting
- **VOI LUT name:** If enabled in the General System preferences
- **(VOI LUT name) MOD:** If the original VOI LUT was modified

NOTE

After a VOI LUT has been saved in a presentation state, the original VOI LUT may not be reproducible. If a subsequent Presentation State is created from this second VOI LUT, the popup window will designate it as “PS MOD PS MOD” to indicate that the VOI LUT is removed by two degrees from the original.



Fig. 40: VOI LUT example

- Right-click the image and from the menu select **VOI LUT Options**.
- To disable the VOI LUT for the image and revert to the Histogram calculation Window Width and Level values, select **Disable VOI LUTs** from the menu.

Standard Presentation of Mammograms

Default Display Settings

The Canvas Page is displayed on the Navigation Console, replacing the worklist. Clinical images are displayed on the diagnostic monitors.

- The **Canvas Page** displays patient exams and provides quick access to diagnostic images and series, patient information, and diagnostic reading workflow. See [“Introduction to the Canvas Page” on page 187](#).
- IntelliSpace PACS automatically applies the first **hanging protocol** in the default sequence. See [“Overview of Hanging Protocols” on page 365](#).
- The hanging protocol can include **linking**: if you adjust image settings on one image, the corresponding settings on linked images are adjusted as well. For more information about linking, see [“Linking Image Series” on page 249](#).
- All images are **autoscaled**, see [“Inverting an Image” on page 268](#).
- All images are **aligned chestwall-to-edge**.
- **Background suppression** is applied, see [“Inverting an Image” on page 268](#).
- IntelliSpace PACS automatically applies **vertical alignment** for images of left and right breasts from the same view position. To adjust the image zoom and alignment, see [“Zoom Settings” on page 279](#).

NOTE

Vertical Alignment will be supported on the Images adhering to the following conditions:

- Same View Position
- Opposite Laterality (left and right)
- Equal Dimensions
- Mammography images can be aligned only with Mammography images and Tomosynthesis images can be aligned only with Tomosynthesis images.



WARNING

Vertical Alignment is supported only on the following View Codes (0008,0100) DICOM tag and the Code Meanings (0008,0104) DICOM tag:

- R-10224: medio-lateral (ML), R-10226: medio-lateral oblique (MLO), R-10228: latero-medial (LM), R-10230: latero-medial oblique (MLO), R-10242: cranio-caudal (CC), R-10242: cranio-caudal (CC), R-10244: caudo-cranial (from below) (FB), R-102D0: superolateral to inferomedial oblique (SIO), R-102CF: exaggerated cranio-caudal (XCC), R-1024A: cranio-caudal exaggerated laterally (XCCL), R-1024B: cranio-caudal exaggerated medially (XCCM)

The above view codes must have any one of the below mentioned view modifiers for applying the Vertical alignment:

- R-102D3: Rolled Lateral (...RL), R-102D4: Rolled Medial (...RM), R-102CA: Rolled Inferior (...RI), R-102C9: Rolled Superior (...RS), R-102D5: Implant Displaced (...ID)
- Vertical alignment will not be applied for images that contains view codes that are not part of the above list.

- Image information is displayed anterior to the breast, see [“Setting Screen Overlay Preferences” on page 484](#).
- To reset the image to its default settings, use the keypad: **Reset Image**.



- To reset the hanging protocol, click the button **Rehang** below the Monitor Reference icon.

Breast-Fit-to-Window

A large part of mammography images is background. To review the breast, it is usually necessary to manually zoom and pan the images. The use of step zoom (pixel-to-pixel), see [“Using the Step Zoom Tool” on page 279](#), reduces the manual interaction required, but can still show background. Therefore, to minimize the manual interaction required, breast-fit-to-window is applied by default to mammography images and Tomo-Synthesis images.

NOTE

- Breast-fit-to-window is applied by default to mammography images and Tomo-Synthesis images (no user interaction required). Compare this with image-fit-to-window, which is a zoom preset [Fit To Window] that can be selected from context menus and configured in hanging protocols.
- Breast-fit-to-window applies the maximum zoom to the anatomical region in the available viewing area. As a reminder, image-fit-to-window shows the complete image (breast and background) in the available viewing area.

**WARNING**

Breast Fit to Window is supported only on the following View Codes (0008,0100) DICOM tag and the Code Meanings (0008,0104) DICOM tag:

- R-10224: medio-lateral (ML), R-10226: medio-lateral oblique (MLO), R-10228: latero-medial (LM), R-10230: latero-medial oblique (MLO), R-10242: cranio-caudal (CC), R-10242: cranio-caudal (CC), R-10244: caudo-cranial (from below) (FB), R-102D0: superolateral to inferomedial oblique (SIO), R-102CF: exaggerated cranio-caudal (XCC), R-1024A: cranio-caudal exaggerated laterally (XCCL), R-1024B: cranio-caudal exaggerated medially (XCCM)

The above view codes must have any one of the below mentioned view modifiers for applying the Breast Fit Window:

- R-102D3: Rolled Lateral (...RL), R-102D4: Rolled Medial (...RM), R-102CA: Rolled Inferior (...RI), R-102C9: Rolled Superior (...RS), R-102D5: Implant Displaced (...ID)
- Breast Fit Window will not be applied for images that contains view codes that are not part of the above list.
- In some cases, while applying Breast Fit to Window, the contours of the image may get displayed outside the viewing pane. In such instances, it is recommended to pan the image.

Autoscaling

When a series of images belonging to the same patient is hung on the diagnostic monitor, the images might display in different sizes applying Breast fit to window. In such instances, the images hung on the diagnostic monitor can be scaled to same size by:

- Invoke Context Menu on the diagnostic monitor and select **“Scale Images to the same size”**
- Keyboard shortcut set to **“Scale Hanging Images to Same Size”**
- Select **“Automatic scaling”** in System Preferences. See [“Setting Autoscaling Preferences” on page 502](#)

Autoscaling displays the breast of the same patient at the same size irrespective of the size of the detector (including film) and when the image was acquired (current exam or priors). When both breasts are displayed, autoscaling preserves the relative proportions of the breasts.

The automatic scaling by default is switched off. See [“Setting Autoscaling Preferences” on page 502](#).

NOTE

- Autoscaling must be defined for the correct modality and body part, see [“Setting Autoscaling Preferences” on page 502](#)
- Displaying the breast at the same size can help to identify a change in breast structure or in the size of a known lesion over time.
- Autoscaling combined with breast-fit-to-window can be simulated by applying true-size zooming to all images, linking the images, and then zooming manually as required.
- Each image can be manually zoomed and panned.
- Breast fit to window is independent of Autoscaling.
- Autoscaling is only applied to the images that are visible in the diagnostic monitor.

Image Processing

The following image processing options are available. The Median Filter option only applies to the current image, not an entire multi-slice series. The appropriate tool depends on the type of image you are viewing. You should try various tools to find the best solution for viewing the enhanced image.

NOTE

The image contrast settings affect only the current image display. Your changes will not be saved.

- **Invert Image:** Applied to all images in a multi-slice series. See [“Inverting an Image” on page 268](#)
- **Edge Enhance:** Applied to all images in a multi-slice series. See [“Enhancing the Edges of an Image” on page 270](#)
- **Edge Detect:** Applied to all images in a multi-slice series. See [“Detecting the Edges of an Image” on page 271](#)
- **Median Filter:** Only applied to one image (current image of multi-slice series). See [“Filtering the Image” on page 271](#)
- **CLAHE** (Contrast Limited Adaptive Histogram Equalization): Only applies to single images (such as CR, DX, MG, and so on). See [“Using Contrast Limited Adaptive Histogram Equalization” on page 272](#)
- **Interpolation** (pixel replication, bilinear interpolation, bicubic interpolation): See [“Selecting an Interpolation Scheme” on page 273](#)

You set options for the processing images features in the **Preferences** dialog box. See [“Setting Image Processing Preferences” on page 458](#). System Administrators can adjust the supplied settings for the whole institution. See [“Setting Image Processing Preferences” on page 458](#).

When you modify or add **Image Processing** settings, IntelliSpace PACS uses these settings over the supplied **Image Processing** preferences.

Because the **Image Processing** filters alter the digital data of the original DICOM, images/studies with **Image Processing** filters cannot be printed to film as diagnostic-quality images. See [“Image Processing Effects” on page 66](#).

Except for the **Invert Image** tool, when you apply an image processing filter to an image, a **P** (Processed) icon is displaced in the lower-right corner of the image. Note that image processing filters cannot be printed to a DICOM device. Images with image processing can be printed to paper, copied to the clipboard, or saved as a file.

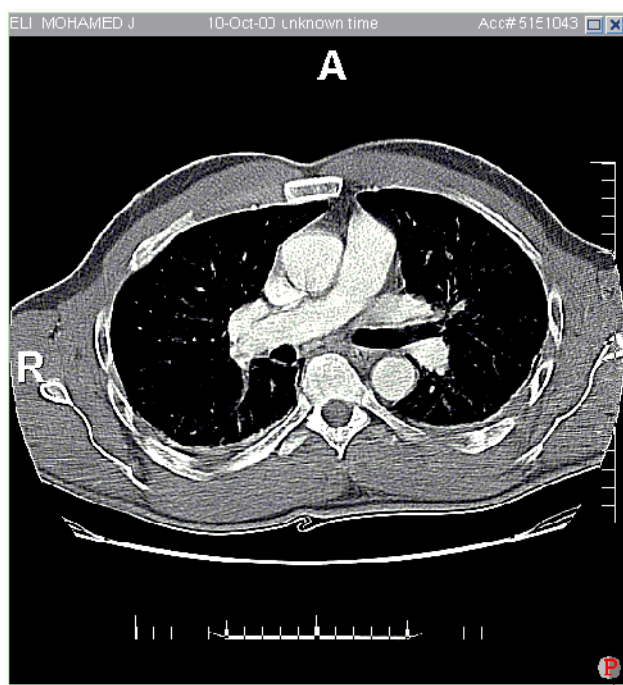


Image Processing filter applied

Fig. 41: Image with Image Processing icon

Inverting an Image

The **Invert Image** feature reverses the black and white coloration of the selected image.

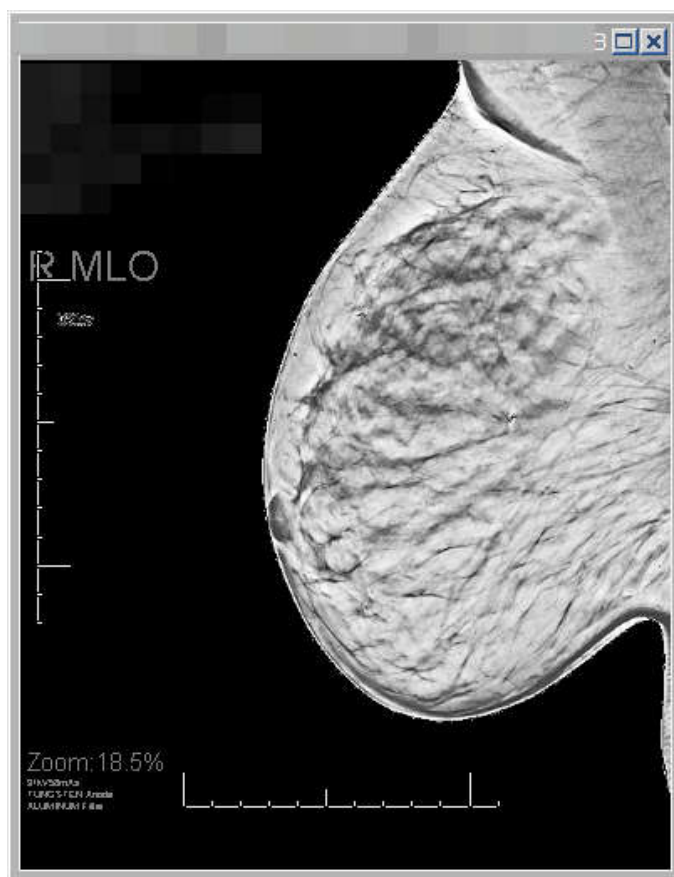
To invert an image, do one of the following:

1. Use the keypad: **Invert**.



2. Right-click the image and from the menu, select **Image Processing**, then **Invert Image**.

When an image is inverted, IntelliSpace PACS automatically applies background suppression: only the breast tissue display is inverted, while the background of the image remains black.



NOTE

- Background suppression can only be applied to the following image types: MG (including Breast Tomosynthesis images), DR breast, DX breast, CR breast.
- Background suppression can only be applied when the view position and laterality are known.
- Automatic background suppression may cause a slight display delay when IntelliSpace PACS actively processes the images for inversion. For very large images, background suppression may fail due to insufficient system memory.
- Background suppression may fail if the contour detection algorithm fails to recognize the breast anatomy on the image.
- Background suppression is also applied when inverting an image after you have altered the window width and window level.
- Applying Invert Image to a set of linked images inverts the state of all images (from black to white and from white to black), including images that had already been inverted.

NOTICE

The background suppression will be applied for the Tomosynthesis images only if the tags Pixel Padding value - 0x00280120 and Pixel Padding Limit - 0x00280121 are present.

Enhancing the Edges of an Image

The **Edge Enhance** feature uses a Laplacian method to increase the visibility of edges in the image. There are three degrees of application: **Light**, **Medium**, and **Strong**. You can change the default setting in the **Image Processing** section of the **Preferences** dialog box. See [“Setting Image Processing Preferences” on page 458](#).

When you select the **Edge Enhance** feature it is applied to all images in a series. This may cause a slight display delay when IntelliSpace PACS actively processes these images in multi-image or **Fast Cine** mode.



Fig. 42: Image with Edge Enhance Filter

1. Right-click the image and from the menu, select **Image Processing**, then **Edge Enhance**.
2. Press the comma and period keys to increase or decrease the degree of edge enhancement.

Detecting the Edges of an Image

The **Edge Detect** tool is an alternative to the **Edge Enhance** tool, and uses a Sobel operator to increase the visibility of edges. There are three degrees of application: **Light**, **Medium**, and **Strong**. You can change the default setting in the **Image Processing** section of the **Preferences** dialog box. See [“Setting Image Processing Preferences” on page 458](#).

When you select the **Edge Detect** feature it is applied to all images in a series. This may cause a slight display delay when IntelliSpace PACS actively processes these images in multi-image or **Fast Cine** mode.

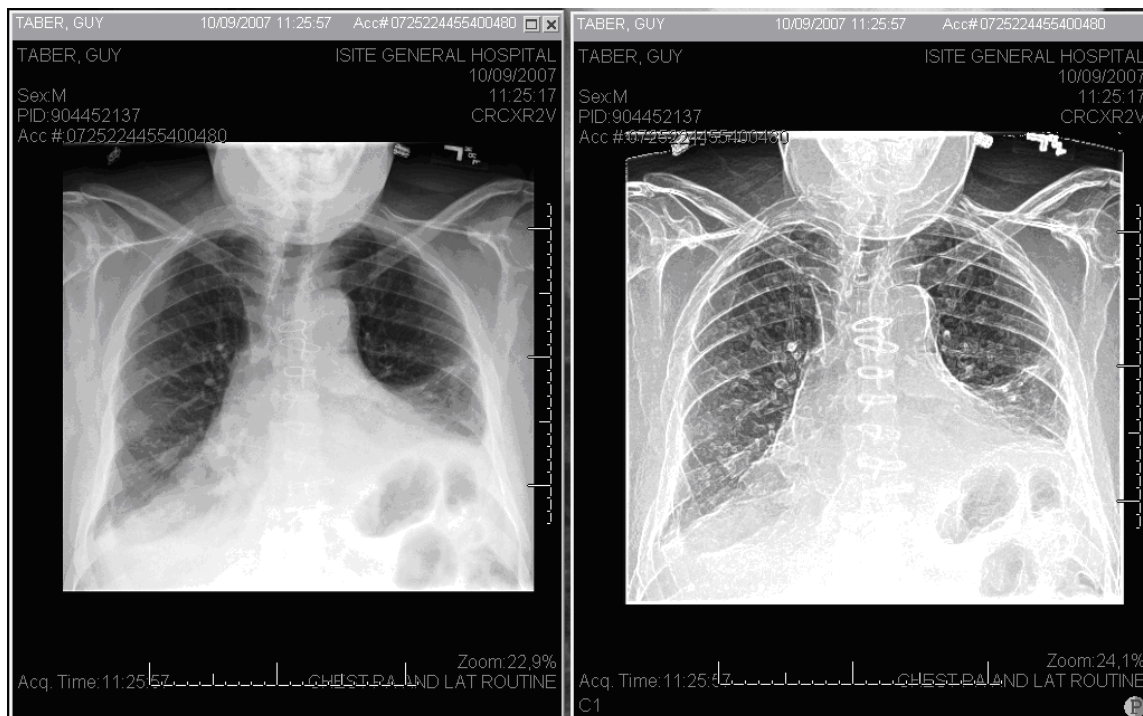


Fig. 43: Image with Edge Detect Filter

1. Right-click the image and from the menu, select **Image Processing**, then **Edge Detect**.
2. Press the comma and period keys to increase or decrease the degree of edge detection.

Filtering the Image

The **Median Filtering** tool utilizes a common filtering method to reduce noise in the image. For a multi-slice series, Median Filtering only applies to the current image, not the entire series. You can change the default setting in the **Image Processing** section of the **Preferences** dialog box. See [“Setting Image Processing Preferences” on page 458](#).

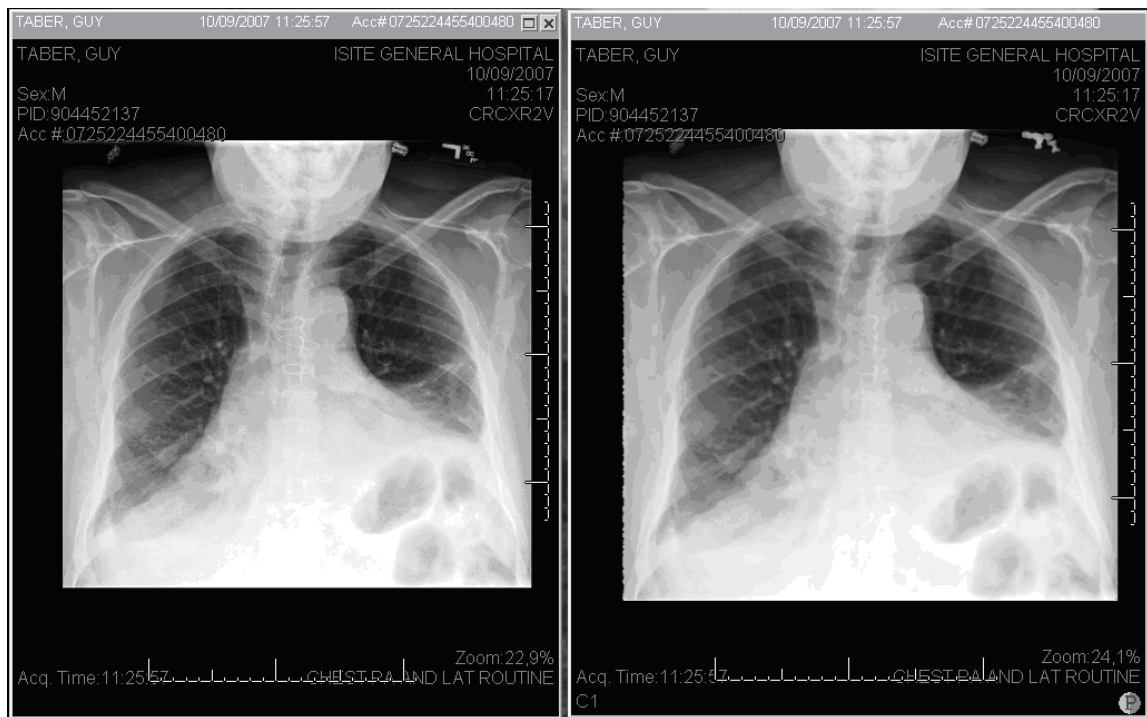


Fig. 44: Image with Median Filter

- Right-click the image and from the menu, select **Image Processing**, then **Median Filter**.

Using Contrast Limited Adaptive Histogram Equalization

The CLAHE (Contrast Limited Adaptive Histogram Equalization) tool utilizes an adaptive form of histogram equalization that enhances the contrast adaptively across the image. You can use CLAHE with the following modalities: CR, DX, MG, and XA.

You can change the default setting in the **Image Processing** section of the **Preferences** dialog box. See [“Setting Image Processing Preferences”](#) on page 458.

When CLAHE is applied, the Window Width/Window Level of the image is automatically adjusted. When CLAHE is selected, the WW/WL is automatically recalculated using the Histogram Calculation because that data range has changed. The initial WW/WL values are restored when CLAHE is turned off.

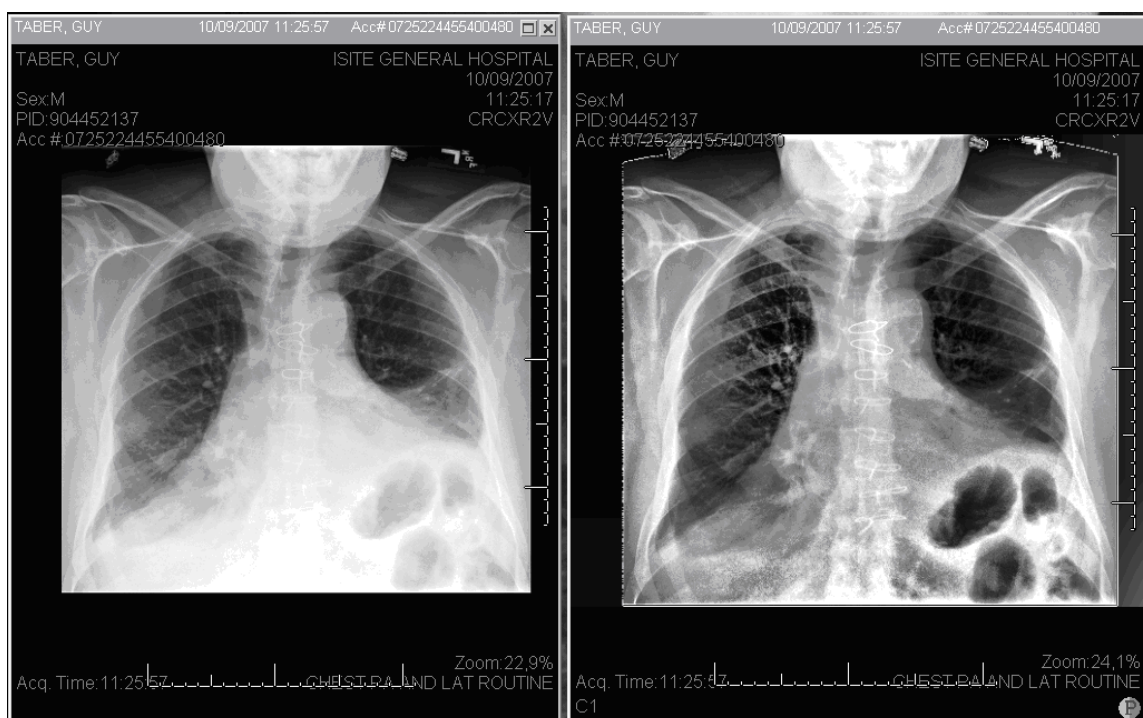


Fig. 45: Image with CLAHE Filter

To toggle the CLAHE filtering, do one of the following:

- ▶ Use the keypad: **CLAHE**.



- ▶ Right-click the image and from the menu, select **Image Processing**, then **CLAHE**.

Selecting an Interpolation Scheme

Interpolation is the process of adding or subtracting pixels by analyzing the adjacent pixels and estimating intermediate values to increase or decrease the resolution of an image. When you resize an image in IntelliSpace PACS, you can choose which interpolation scheme you want to use.

- ▶ Right-click the image and from the menu, select **Image Processing**, then **Pixel Replication**, **Bilinear Interpolation**, or **Bicubic Interpolation**. The option you select is checked in the menu.
 - **Pixel Replication:** Performed by sampling the nearest neighboring pixel. Step-like straight boundaries may be evident after the transformation.
 - **Bilinear Interpolation:** The default presentation of images in IntelliSpace PACS, performed by sampling four neighboring pixels. **Bilinear Interpolation** may decrease resolution and blurring by averaging the step-like boundaries that may occur with **Pixel Replication**.

- **Bicubic Interpolation:** Preserves fine details in the image very well. It is performed by sampling 16 neighboring pixels, and does not have the step-like boundary problem of **Pixel Replication** or the blurring problem of **Bilinear Interpolation**.

Using the Scout Tool

The Scout tool allows you to see the planar location of an image using another image within the same study as a reference frame. Scout lines are displayed on the image or series as you move your mouse over other images of a different orientation. Three types of scout lines are available: **Single**, **Bracket**, and **All**. The line types are set in the Display section of the User preferences. See [“Setting Display Preferences” on page 460](#).

The Scout tool is available for CT, MR, and PT modalities and works with the Localizer tool. See [“Using the Localizer Tool” on page 275](#).

To leave the image selected for displaying scout lines unobstructed, the reference lines only appear when the cursor is passed over another image or series. As the other series is reviewed, the corresponding scout line is highlighted to indicate the planar location of the image, as seen below.

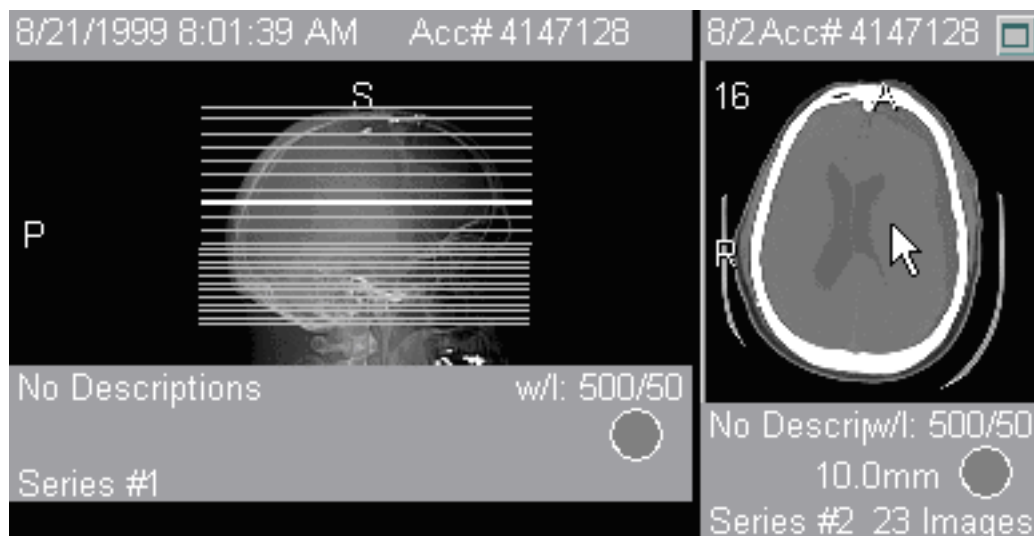


Fig. 46: Scout lines example

1. Do one of the following:
 - Right-click the image or series and select **Scout Line Mode** from the menu.
 - Press F11.
2. The **Scout Mode** item is displayed with a check mark in the **Image** menu. Select **Scout Mode** (or press F11) again to remove the scout lines.

Using the Localizer Tool

Like Scout lines, the Localizer tool helps you visualize and navigate to a location in multiple series with different orientations. You can use the Localizer tool to navigate through multiple series with different orientations (Axial, Sagittal, and Coronal) simultaneously.

A crosshair (+) is displayed in every series of an exam at the x/y coordinates that correspond to the location of your cursor. The crosshairs move in sync as you move the cursor over the specified series.

The Localizer tool is useful for PET/CT studies, allowing you to create a “ghost” cursor on the other Axial Slices. (This only works if the CT and PET images have the same DICOM frame of reference.)

You set whether or not the Localizer tool shows scout lines in the Display section of the User preferences. See [“Setting Display Preferences” on page 460](#).

NOTE

The state of the Localizer tool for an image or series is not saved as part of Presentation States. Also, clicking and dragging does not adjust the Window Width and Level of Localizer-enabled images.

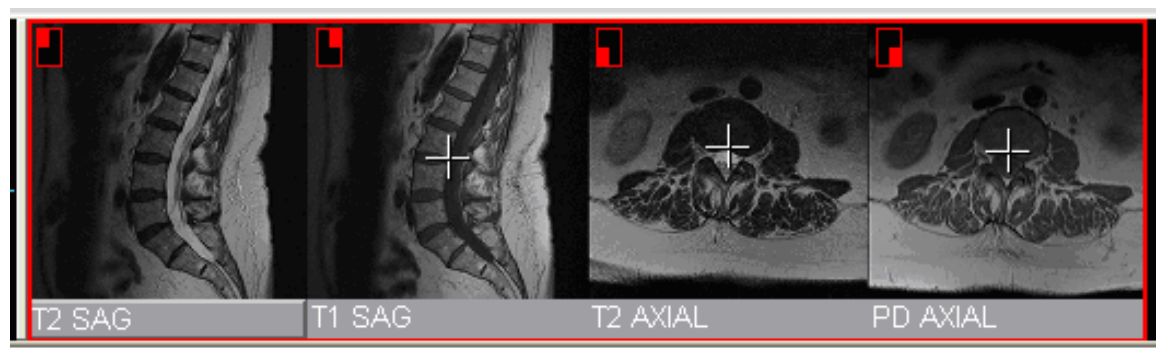
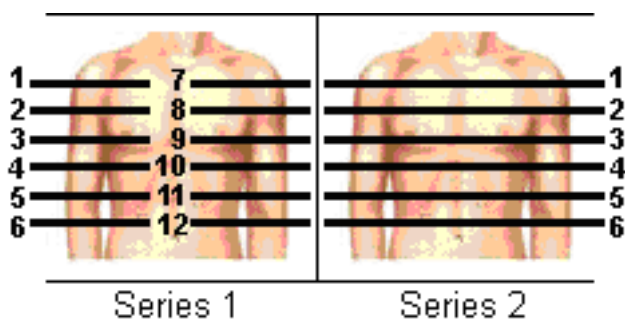


Fig. 47: Localizer tool example

1. Do one of the following:
 - Right-click the image or series and select **Localizer Tool** from the menu.
 - Press F12.
2. The **Localizer Tool** item is displayed with a check mark in the menu. Select **Localizer Tool** again to remove the localizer lines.

**WARNING**

Multi-phase studies contain multiple images with the same location identifier. Paging through a multi-phase series that has not been split typically results in jumping back to the first slice location each time you reach the end of each phase within the series. If you use the Localizer tool to navigate through a multi-phase series, you will notice that the other linked series are synchronized on location and basically display the image with closest location to the one displayed in the master series. If the non multi-phase series is used as the master, IntelliSpace PACS tries to find the image with the closest location in the multi-phase series, and because there are potentially multiple matches, IntelliSpace PACS displays the best match from the first phase. (In this example IntelliSpace PACS would never display image 7 through 12.) In other words, you cannot review all images of a multi-phase series by paging through another series while using the Localizer tool.



Zoom Presets

You can zoom in on an image up to 1600%. When you zoom, the scales at the bottom and right of the image adjust to always show 10 mm per division. Scale glyphs are placed every 10 mm (1 cm), but the lines are drawn white on black embossing to improve visibility. The size of the division is also displayed with embossed text. Indicators at the 5th and 10th positions are distinguished by longer lines.

Do one of the following:

- Roll the mouse-wheel forward or use the Down or Right arrow keys. The image zooms in at the location of your cursor. To zoom out, roll the mouse-wheel backward or use the Up or Left arrow keys. To zoom into an image-series, such as an MR or CT exam, left-click the mouse while holding down the **Alt** key and drag the mouse forwards to zoom in or backwards to zoom out.

NOTE

When “Enhanced” is selected for “Mouse Scheme Options” in the Mouse-User Preferences, then the behavior of the mouse is reversed:

- Roll the mouse-wheel forward or use the Down or Right arrow keys to zoom out the image at the location of your cursor.
- Roll the mouse-wheel backward or use the Up or Left arrow keys to zoom in the image at the location of your cursor.

- ▶ Right-click on the image and select **Zoom Presets**, then select the desired zoom level.

When you zoom, the scales at the bottom and right of the image adjust to show one of the following:

- 10 mm per division at smaller zoom factors
- 1 mm per division at larger zoom factors

To show the current size of the division, left-click on the scale and hold the mouse button down.

NOTE

- Alternatively, you can use the Step Zoom tool to step sequentially through portions of the image at full resolution. See [“Using the Step Zoom Tool” on page 279](#).
- When linking is activated, this function affects all linked images. See [“Linking Image Series” on page 249](#).

Fit to Window Zoom Preset

Fit to Window applies an adjusting zoom factor that always maintains the entire image visible on the screen.

- ▶ Right-click on the image and select **Zoom Presets**, then select **Fit to window**.

Pixel-to-Pixel Zoom Preset (Original Size)

Pixel-to-pixel is a zoom setting where a single pixel in the image corresponds to a single pixel on the screen.

- ▶ Right-click on the image and select **Zoom Presets**, then select **100% (Original size)**.

Using the Magnifying Glass Tool

The Magnifying Glass tool allows you to zoom into a small portion of the image using a pre-configured magnification factor. When selected, the center of the Magnifying Glass window is located at the last location of the cursor. You can use the Magnifying Glass tool on an image popup window or a virtual monitor.

By default, the **Y** key toggles the Magnifying Glass tool on and off.

The size and magnification factor of the Magnifying Glass window are set in the User Display preferences. See [“Setting Display Preferences” on page 460](#). You can set a keyboard shortcut preference for the Magnifying Glass tool. See [“Setting Keyboard Shortcut Preferences” on page 456](#).

The Magnifying Glass tool has two modes:

- **Roaming:** Any movement of the mouse moves the Magnifying Glass above the underlying image showing the image zoomed in (in the set factor) so that the underlying portion of the image is centered and zoomed in the Magnifying Glass window, just like a physical magnifying glass. In Roaming mode, the cursor is invisible. You can click to switch to Stationary mode.
- **Stationary:** The Magnifying Glass window stays stationary when the mouse moves, and the cursor is visible. You can click to switch to Roaming mode.

Note the following:

- You can only have one Magnifying Glass window open at a time in each popup window or virtual monitor.
- You cannot resize the Magnifying Glass window by dragging its border.
- You cannot move the Magnifying Glass outside the limits of the window in which it appears. This means that if a window has multiple images, the Magnifying Glass roams above all of them, identifying the image being magnified.
- If you use the Magnifying Glass in an image popup window and resize the window, the Magnifying Glass stays at its current location.
- Overlays or annotations on the original image are not magnified.
- Cine modes are not available when Magnifying Glass is being used.
- If you change the zoom of the original image to be equal to or bigger than the zoom factor for the Magnifying Glass window, the zoom factor of the Magnifying Glass window increases to one increment above the zoom factor of the original image.

1. To select the Magnifying Glass, do one of the following:

- Press the keypad button **Magnifying Glass** to toggle on the Magnifying Glass.



- Right-click on the image in the popup window or virtual monitor and select **Magnifying Glass**.

2. To adjust the settings for the Magnifying Glass tool, right-click and select one of the following options:
 - **Window Width/Level** options
 - **Zoom Presets** (200%, 300%, and 400%). These presets are only available if the underlying image has a smaller zoom factor. In a single image, you can use the mouse wheel to change the zoom factor of the Magnifying Glass.

Closing the Magnifying Tool

- Right-click on the magnifying glass and select **Close**.

Zoom Settings

NOTE

The image zoom settings affect only the current image display. Your changes will not be saved.

True Size Zoom



WARNING

Do not use True Size as a measurement tool.

The True Size setting approximately represents the actual size of the anatomical structures on the screen.

To activate True Size zoom, use the keypad: **True Size**.



Using the Step Zoom Tool

NOTE

When linking or mirror linking is activated, these functions affect all linked images. See [“Linking Image Series” on page 249](#) and [“Creating Mirror Links” on page 255](#).

The Step Zoom tool allows you to step sequentially through portions of an image in an image popup window or virtual monitor at full resolution, instead of having to zoom and pan manually. The number of steps is determined by the size of the image and the size of display area. (The maximum number of steps is 16.)

For mammography images, the first step displays the region of glandular tissue from the anterior side of the breast. Thereafter, the order in which you step through the image is left to right, from top to bottom, as shown in the following example.

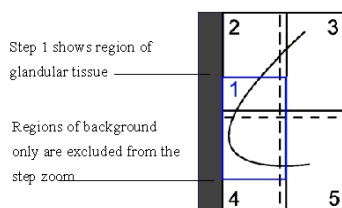


Fig. 48: Step Zoom sequence example. Dashed lines indicate overlap.

The Step Zoom tool divides the full-scale image into smaller overlapping portions at the size of the window that hosts the image. The order in which you step through the image is top to bottom, then left to right, as shown in the following example.

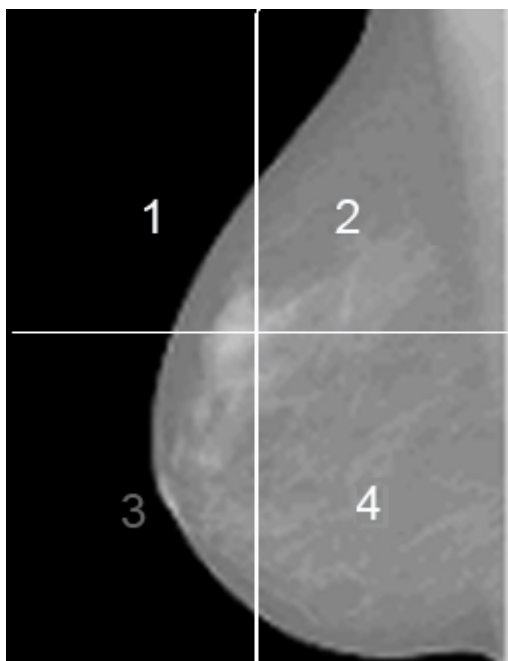


Fig. 49: Step Zoom example

By default, the **S** key initiates the Step Zoom tool and is used to sequentially step through the image. If desired, you can set a User preference to define a different keyboard shortcut. See [“Setting Keyboard Shortcut Preferences” on page 456](#).

You can also use the keypad to initiate the Step Zoom tool as follows:

1. To initiate the Step Zoom tool, press the keypad button **Step Zoom**.



2. Continue to press the keypad button to step through different portions of the image, from top to bottom and left to right.
3. When all the portions of the image are shown, the next time you press the keypad button, the image is shown in **Fit to Window** mode.

When you use the Step Zoom tool, the image thumbnails on the Canvas Page display rectangles that illustrate which part of the image is currently shown.

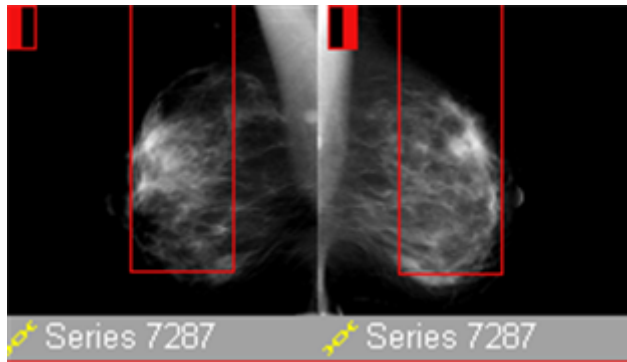


Fig. 50: Image thumbnails showing Step Zoom with Mirror Link

Note the following:

- The number of steps for an image is based on the size of the full-scale image and the size of the window. For example, if the size of the full-size image is 1000X2000 pixels and the size of the window is 400X600, the number of steps is 12 (3X4).
 - The Step Zoom tool has no effect on a full-scale image that is not bigger than the size of the window, or if the number of steps required to step through all the parts of the image is greater than 16.
 - There is a minimal overlap of 10% of the size of the window between each horizontal and vertical step area.
 - When you use the Step Zoom tool in a fixed window, such as a virtual monitor, the correlating thumbnail shows a red navigation rectangle representing the portion of the image that is currently being viewed.
 - If you resize, flip, rotate, re-hang, split the monitor, or change the layout of the window, the Step Zoom tool cycle is reset.
 - You can use the Step Zoom tool in unlinked, linked, and mirror linked MG images. If the linked images are not the same size (and/or their windows are not the same size), the number of steps may differ between the images. This could cause a synchronization loss as you step through the images.
1. Display an image in an image popup window or virtual monitor. The size of the image in 100% zoom must be larger than the size of the window in which it is displayed for the Step Zoom tool to work.

2. Press **S** to initiate the Step Zoom tool. You can set a User preference to change this default key if desired. See [“Setting Keyboard Shortcut Preferences” on page 456](#).
3. Continue to press **S** (or the other assigned key) to step through different portions of the image, from top to bottom and left to right.
4. When all the portions of the image are shown, the next time you click **S** (or the other assigned key), the image is shown in Fit to Window mode.

Digital Mammography Images Display

Digital Mammography images viewed in IntelliSpace PACS may display a thin white outline, a few pixels wide, along the outer edge of the breast tissue. For this issue to present in IntelliSpace PACS the following things must occur:

- The sending modality applies a pixel padding value to discriminate non anatomic regions of the image
- The pixel padding value is far outside the dynamic range of the anatomic data representation
- The image data is offset from zero by several thousand gray scale levels
- The image is viewed in IntelliSpace PACS at a zoom of 50% or less

After receipt of such images in IntelliSpace PACS, when the iSyntax technology is applied, the wavelet representation of the discontinuity created by the applied pixel padding value can result in the presentation of the white outline when the image is viewed at a zoom value of 50% or less. This does not occur when the image is viewed at a zoom value of greater than 50%.

This type of discontinuity can never occur in anatomy. The outline is caused by artificial pixel padding values, and appears outside of the breast tissue alongside the outer edge of the breast. The image quality is not affected by this problem. While the outline is displayed at a zoom of 50% or less, there is no corruption of the image or image information. When the images are viewed diagnostically, at a magnification close to one (100% zoom), the outline is not present.

Panning Around an Image

You can use the Step Zoom tool to step sequentially through portions of the image at full resolution, instead of having to pan manually. See [“Using the Step Zoom Tool” on page 279](#).

- Hold down the mouse-wheel button while dragging your mouse in the desired direction. To pan around an image-series, such as an MR or CT exam, left-click the mouse while holding down the **Ctrl** key and drag the mouse to display the desired area.

NOTE

When linking is activated, this function affects all linked images. See [“Linking Image Series” on page 249](#).

Flipping an Image

The **Flip Image** feature allows you to rotate the selected image horizontally (around the y-axis) or vertically (around the x-axis). It can be useful to flip a study acquired as prone to look as supine, for ease of interpretation (for example, kidney stones and other renal protocols). In mammography, it can be useful to flip a prior so that the images are displayed chestwall-to-chestwall.

- ▶ Right-click on the image and from the menu select **Flip/Rotate**, then **Flip Horizontal** or **Flip Vertical**. Note that one of the orientation markers at the top or left of the image changes (for example, from “A” (Anterior) to “P” (Posterior)).

NOTE

Keyboard shortcuts to Flip Horizontal or Flip Vertical can be set in the User preferences.

Rotating an Image

The **Rotate Exam** feature allows you to rotate the selected image or series in 90 degree increments, clockwise or counter-clockwise.

- ▶ Right-click on the image or series and from the menu select **Flip/Rotate**, then **Rotate 90 CW** or **Rotate 90 CCW**.

Sorting Images

You can sort images by:

- **Table Position Ascending**
- **Table Position Descending**
- **Image Number Ascending**
- **Image Number Descending**

NOTE

This option is not available for multi-frame images that have the same image number.

- ▶ Select the image and from the menu select **Flip/Rotate/Sort/Split**, then the desired sort option.

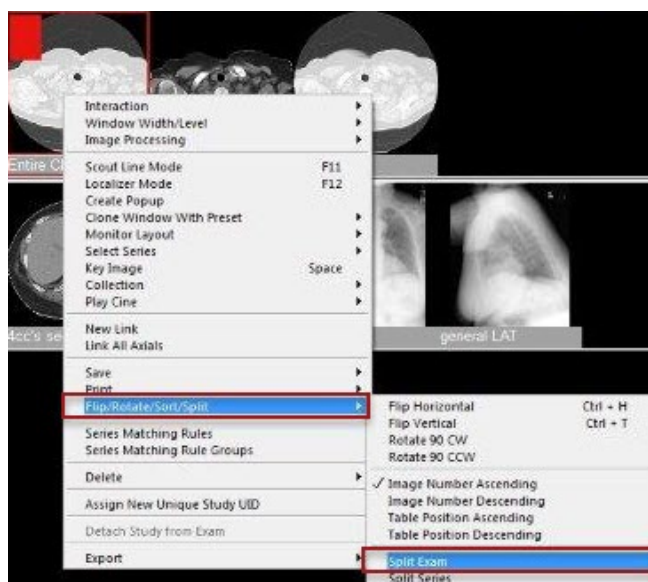
Splitting Exams

The **Split Exam** feature allows you to temporarily split a series according to specific DICOM tags. This feature is only available for stacked images, especially multi-frame multi-phased stacked windows. Note that you cannot split clones. If there are no attributes available for splitting, or if the split criteria are not met, a message displays stating that the exam cannot be split.

NOTICE

The split exams will retain the measurements, annotations, image processing settings and sort order of the original exam.

1. Right-click on the image and from the menu, select **Flip/Rotate/Sort/Split**.
2. Choose **Split Exam** from the sub-menu. The **Split Exam** dialog box displays.



3. Select the DICOM tags that you wish to use for splitting the exams. The tags depend on the tags associated with the type of series you have selected.
4. Click **OK**. The original series is broken into different series, according to the selected attributes. This is not a permanent change to the exam, but rather a type of display. To preserve the split for later viewing, you must save a Presentation State. See [“Using Presentation States” on page 226](#).

Splitting Series

The **Split Series** feature allows you to split a series based on the selected DICOM tags. This feature is only available for stacked images in a series.

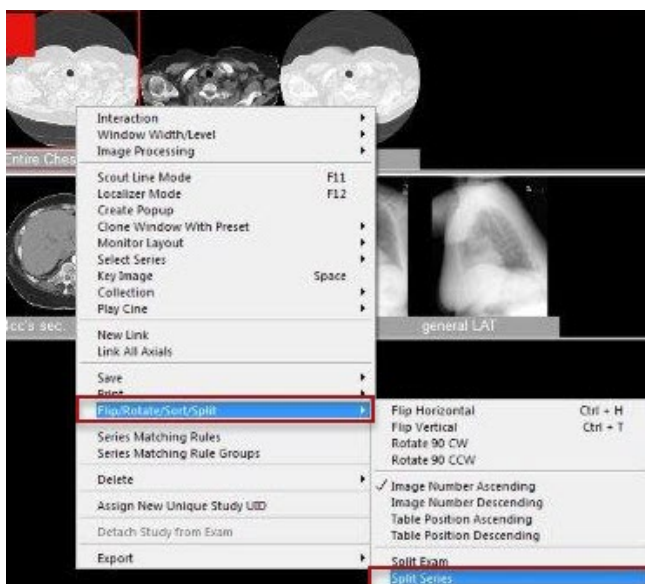
NOTICE

The split series will retain the measurements, annotations, image processing settings and sort order of the original series.

1. Right-click on the image and from the menu, select **Flip/Rotate/Sort/Split**.
To select multiple series to be split, press the **SHIFT** key while selecting and then right-click.

NOTICE

Multiple series across exams cannot be split. The "Split Series" option will be disabled on selecting multiple series across exams.



2. Choose **Split Series** from the sub-menu. The **Split Series** dialog box displays.
3. Select the DICOM tags that you wish to use for splitting the series.
4. Click **OK**. The original series is broken into different series, according to the selected split criteria. This is not a permanent change to the exam, but rather a type of display. To preserve the split for later viewing, you must save a Presentation State. See ["Using Presentation States"](#) on page 226.

Viewing Shutter Images

IntelliSpace PACS supports DICOM circular and rectangular shutters. If modalities send values in DICOM tags (0018,1610; 0018,1612) for circular shutters and DICOM tags (0018,1602; 0018,1604; 0018,1606; 0018,1608) for rectangular shutters, IntelliSpace PACS displays a “shuttering” effect on images that tone down the background of an image so users can focus on a specific region.

To turn the shuttering effect off, hold down the **Ctrl + Shift + F6** keys.



Fig. 51: Circular shutter effect



Fig. 52: Rectangular shutter effect

15 Measuring and Annotating Images

IntelliSpace PACS includes the following tools you can use to measure and annotate images.

- **User Tool Palette:** See [“Using the User Tool Palette” on page 291](#)
- **Ruler:** See [“Using the Ruler Tool” on page 296](#)
- **Angle:** See [“Using the Angle Tool” on page 299](#)
- **Cobb Measurements:** See [“Taking Cobb Measurements” on page 303](#)
- **ROI Circle:** See [“Using the ROI Circle Tool” on page 304](#)
- **ROI Freehand:** See [“Using the ROI Freehand Tool” on page 309](#)
- **ROI Ellipse:** See [“Using the ROI Ellipse Tool” on page 315](#)
- **Point Value:** See [“Using the Point Value Tool” on page 317](#)
- **Calibrate:** See [“Calibrating Images” on page 319](#)
- **Ultrasound measurements:** See [“Taking Ultrasound Measurements” on page 319](#)
- **Text Annotate:** See [“Annotating Images” on page 320](#)
- **Spine Labeling:** See [“Spine Labeling” on page 324](#)

For information on the format used for measurement value display for Projection Radiography modalities, see [“Measurement Values for Projection and Non-Projection Radiography Modalities” on page 288](#).

When you add a measurement or annotation to a window, IntelliSpace PACS automatically marks that image as a key image. You cannot use annotations, measurement tools, and the **Localizer** tool at the same time.



WARNING

Measurement values are modality dependent. The measurement values that IntelliSpace PACS displays are derived from information sent by the modality responsible for generating the image being measured. If this modality is incorrectly configured or defective, IntelliSpace PACS measurement values may be adversely affected and may be incorrect. Philips strongly recommends the use of an appropriately placed object of known size for determining what magnification factor has been applied to the image.

Changing the Font or Line Style

When you right-click on a measurement or annotation, you can select **Edit Font**, **Edit Line Style**, or both, depending on the measurement or annotation.

- For **Font**, you can select from a list of fonts available on your workstation. To resize the font of a text annotation, drag a corner of the text box.
- For **Line Style**, if the line is solid, you can select a line width from 1 (thinnest) to 4 (thickest). The line style can be solid, dashed, or dotted.

Applying Measurements and Annotations to all the Images/Frames in a Series

User can apply the selected measurement/annotation to all the images in a series. To perform this, select the measurement/annotation -> right click on the context menu -> select **Copy to All** option.

This option is used only for viewing purpose.

The copied measurements/annotations are independent of each image/frame in the series. Therefore, modifying or deleting measurements/annotations is not reflected in other image/frame in the series.

NOTE

This option is not available on a series having a single image.

NOTE

The Measurement/Annotation on which Copy to All is invoked is not saved as part of the presentation state (GSPS).

The applied measurements and annotations to all the images in a series using **Copy to All** can be deleted by using **Delete All** option.

This option will delete the copied measurements/annotations across images in a single series.

NOTE

Delete All option is not available in the Key Image Window.

Measurement Values for Projection and Non-Projection Radiography Modalities

The following format is used for measurement value display for Projection Radiography modalities: `<value> < units> (< code>):`

- `<value>` is the floating point value of the measurement
- `<units>` is the units of the measurement (e.g., mm, cm, Tesla, etc.)
- `<code>` is one of the following:

<code>	Pixel Spacing Tag Used	Additional Conditions
Geometric	(0028,30)	Tag (0028,0A02) has the value GEOMETRY
Imager	(0018,1164)	
Geometric	(0018,1164) & (0018,1114)	(0018,1114) is not equal to 0 or 1
Fiducial	(0028,0030)	Tag (0028,0A02) has the value FIDUCIAL
Calibrated	IntelliSpace PACS manual calibration	
Unknown	(0028,0030)	When tag (0028,0A02) is absent

The following format is used for measurement value display for non-Projection Radiography modalities: <value> <units>:

- <value> is the floating point value of the measurement
- <units> is the units of the measurement (e.g., mm, cm, Tesla, etc.)

Important

For Projection Radiography modalities only, if there are measurements that were displayed from a presentation state that was created before IntelliSpace PACS 3.6.48/4.1.48 whose values are different than the current version because of a different pixel spacing value, both of the measurements using the original pixel spacing and the currently selected pixel spacing are displayed. The current measurement is displayed on top and the original measurement from the presentation state is displayed on the bottom.

Accuracy and Precision in Measurements

IntelliSpace PACS relies directly on the information provided by the manufacturers of the imaging modalities in order to perform any measurements. The accuracy of these measurements is determined by the values and interpretations of related fields within the DICOM imaging standard.

For example, for tomographic modalities, pixel size is determined based on the value of the “Pixel Spacing” DICOM tag (0028,0030) and is being used to determine the physical distance in the object space. Pixel spacing of 1 mm implies measurement accuracy of +/- 0.5 mm. Similarly, for projective modalities, if DICOM Presentation Size Mode is set to TRUE SIZE Imager Pixel Spacing (0070,0100) can be used to estimate the size of the object. The actual estimate of accuracy will vary depending on the modality type and the specifics of the imaging protocol.

Measurement	Unit of Measure	Precision
Length (Ruler)	millimeters (mm)	1/10 of a unit (i.e., 0.1 mm, if in millimeters)
	centimeters (cm)	1/100 of a unit (i.e. 0.01 cm ,if in centimeters)
Angle (Angle tool and Cobb measurements)	Degrees	Whole numbers as in 1 unit, (i.e., .45 degrees)
Area (ROI Circle, ROI Freehand, ROI Ellipse)	cm^2	cm^2:
	mm^2	< 10 - 1.1234
		< 100 - 11.123
		< 1000 - 111.12
		< 10000 - 1111.1
		>= 10000 will be whole numbers
		mm^2:
		<10 - 1.1234
		<100 - 11.123
		>=100 - 111.12
Brightness ((ROI Circle, ROI Freehand, ROI Ellipse, Point Value Tool)	Hounsfield units for CT; grayscale units for others	Density: 1/100 of a unit (i.e., 1.00)
		Standard Deviation: whole numbers as in 1 unit

Order of Precedence

IntelliSpace PACS uses the following order of precedence for the pixel spacing for measurements and image display (in the case of non-square pixels) for Projection Radiography modalities:

SOP Classes	Modality
1.2.840.10008.5.1.4.1.1.1	CR
1.2.840.10008.5.1.4.1.1.1.1	DX
1.2.840.10008.5.1.4.1.1.1.2	MG
1.2.840.10008.5.1.4.1.1.1.2.1	MG Unprocessed
1.2.840.10008.5.1.4.1.1.1.3	IO
1.2.840.10008.5.1.4.1.1.12.1	XA
1.2.840.10008.5.1.4.1.1.12.1.1	Enhance XA

SOP Classes	Modality
1.2.840.10008.5.1.4.1.1.12.2	XRF
1.2.840.10008.5.1.4.1.1.12.2.1	Enhance XRF

Note the following:

- IntelliSpace PACS uses the calculated pixel spacing values if the image was manually calibrated using the IntelliSpace PACS Image Calibration tool.
- IntelliSpace PACS uses calibrated pixel spacing tag (0028,0030) if present and different than tag (0018,1164) or if (0018,1164) is not present.
- IntelliSpace PACS uses the imager pixel spacing (0018,1164) divided by the estimated radiographic magnification factor (0018,1114), if both are present and the value of 18,1114 is not 1, 0.
- IntelliSpace PACS uses the imager pixel spacing (0018,1164) if present
- IntelliSpace PACS displays measurements in pixels

For all other modalities, the following applies:

- IntelliSpace PACS uses the calculated pixel spacing values if the image was manually calibrated using the IntelliSpace PACS Image Calibration tool.
- IntelliSpace PACS uses calibrated pixel spacing tag (0028,0030) if present.
- IntelliSpace PACS displays measurements in pixels.
- For US images only,
 - 1.2.840.10008.5.1.4.1.1.6.1 US Single Frame
 - 1.2.840.10008.5.1.4.1.1.3.1 US MultiframeIntelliSpace PACS uses the US region calibration values 0018,602c and 0018,602e for pixel spacing.

Using the User Tool Palette



WARNING

Measurement values are modality dependent. The measurement values that IntelliSpace PACS displays are derived from information sent by the modality responsible for generating the image being measured. If this modality is incorrectly configured or defective, IntelliSpace PACS measurement values may be adversely affected and may be incorrect.

IntelliSpace PACS provides a **User Tool Palette** that streamlines your work and allows you to make various measurements and annotations on an image. You can drag the **User Tool Palette** to any location on your screen. You can also toggle the display of the palette by pressing **M**. The User tool palette displays for the exam until you close the palette or exam.



Fig. 53: User Tool Palette

You can define keyboard shortcuts for the tools on the User Tool Palette that set whether or not the tool remains active (persists) after you use it on an image. See [“Keyboard Commands” on page 533](#).

1. Right-click on an image and from the menu, select **Measurements**, then select **User Tool Palette**. The **User Tool Palette** displays.
2. Do one of the following:
 - To use a tool once, click on the icon of the tool you want to use.
 - To use the tool more than once, double-click on the icon of the tool you want to use.

⇒ The cursor changes to a cross-hair when User Tool Palette is being used.
3. Click the **Close** icon to close the **User Tool Palette**.

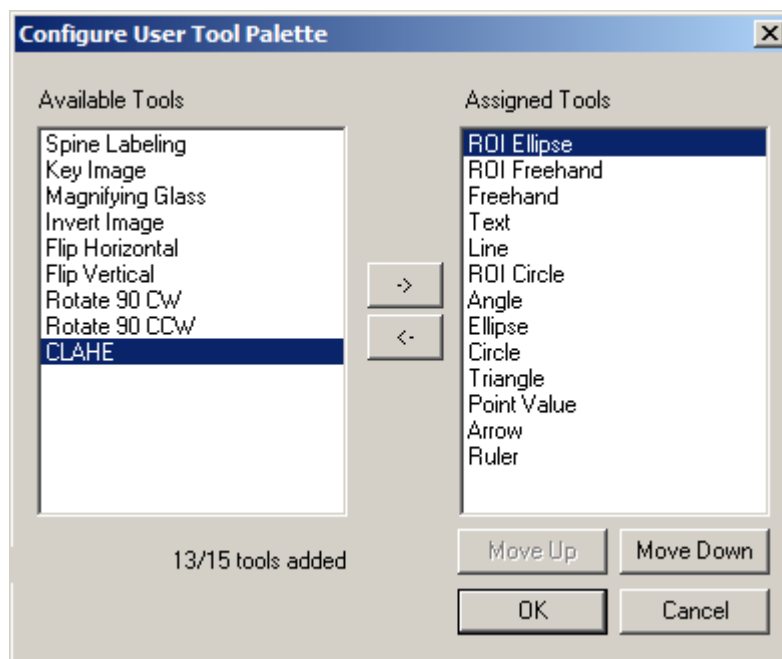
Configuring the User Tool Palette

Measurement and Annotation tools can now be accessed quickly from the User Tool Palette. User has the option to configure the tools in the palette as desired. User no longer needs to navigate through the menu options for accessing these tools. The User Tool Palette once configured is specific to the logged in user and is saved until the user reconfigures the User Tool Palette. This configuration persists across machines per user.

User Tool Palette can be configured as per the user requirement. The configurations made to the **User Tool Palette** are specific to the logged in user. User can now configure and access the tools easily from the **User Tool Palette** and the configurations will remain the same till the user reconfigures the **User Tool Palette**.

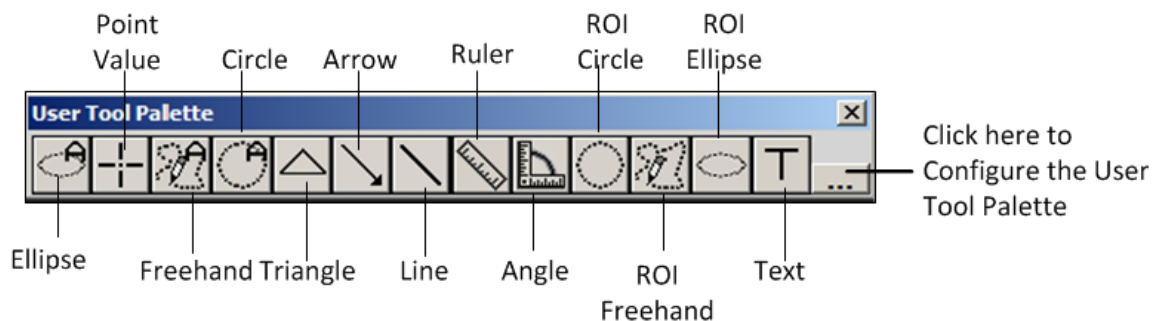
To configure the **User Tool Palette**, perform the following steps:

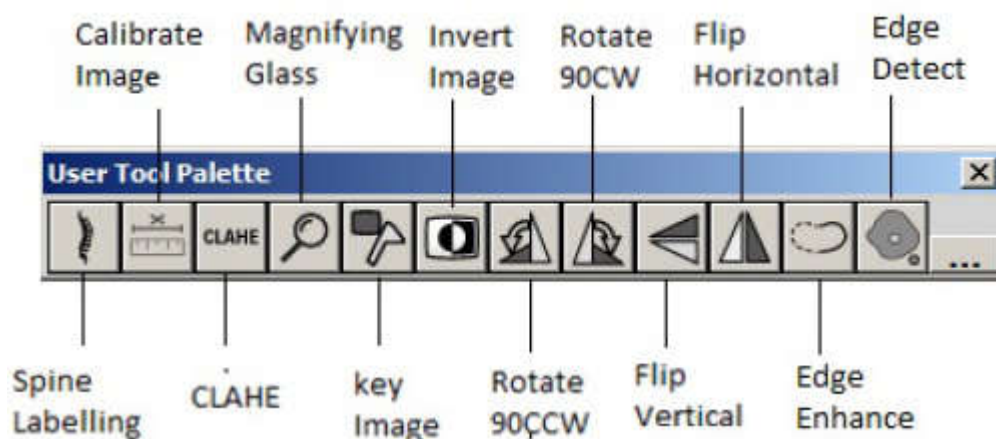
1. Click on **Configure** button  to open **Configure User Tool Palette** Dialog.



2. In the **Configure User Tool Palette** dialog box, tools that are already displayed on the user tool palette are listed under **Assigned Tools**. Remaining tools that can be configured are listed under **Available Tools**.
3. Using **Configure User Tool Palette** dialog, following operations can be performed to customize the User Tool Palette:
 - To add tools to the User Tool Palette, choose the tool from **Available Tools** list and use **>** button to move the tool to **Assigned Tools** list.
 - To remove tools from the User Tool Palette, choose the tool from **Assigned Tools** list and use **<** button to move the tool to **Available Tools** list.
 - To rearrange the order of tools in the User Tool Palette, use **Move Up** or **Move Down** buttons.
4. Click **OK** to save the configuration and reflect the changes on the User Tool Palette.
5. Click **Cancel** to discard the configuration changes made to the user tool palette.

The tools that can be configured using the User Tool Palette are as follows:



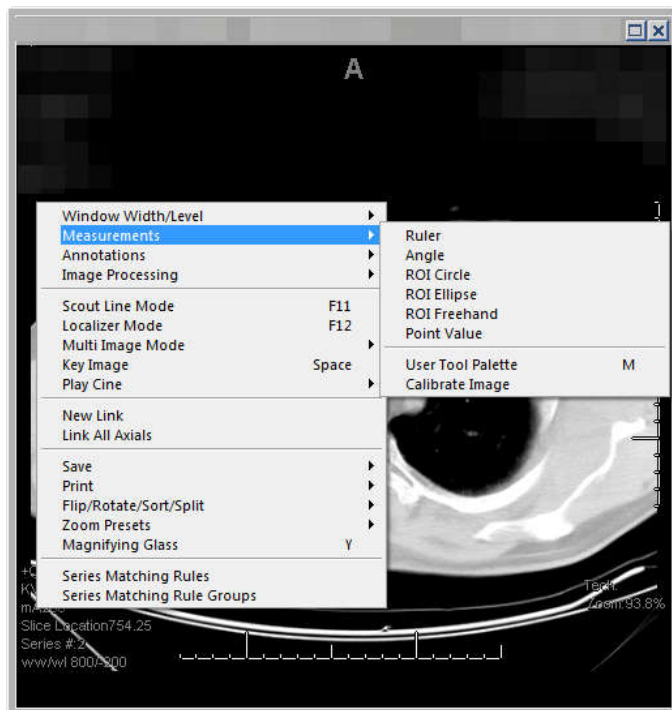


Using the Context Menu

This section will introduce you to the context menu of Measurements and Annotations:

Measurements

To see the Measurements context menu, right click on popup and select **Measurements**.



A drop down list of the measurement tools displays.

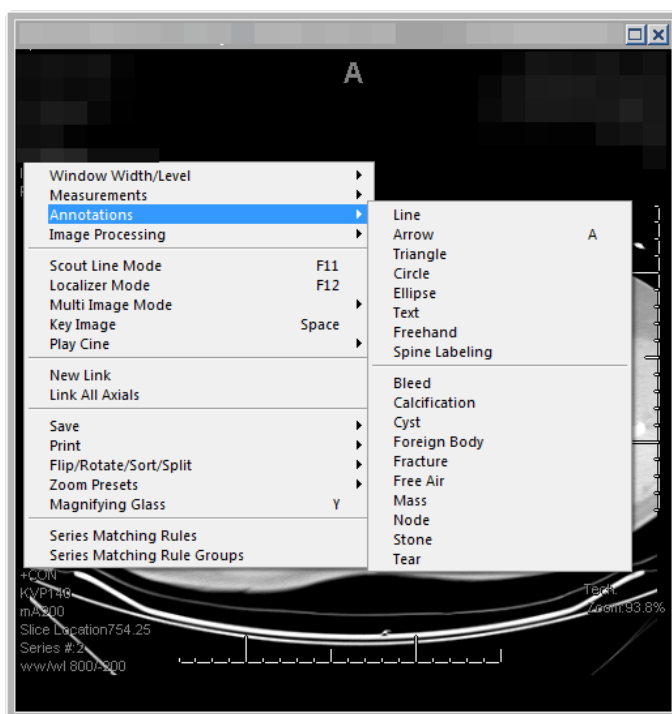
Select the required tools to measure the images as described in the following section.

- [“Using the Ruler Tool” on page 296](#)
- [“Using the Angle Tool” on page 299](#)

- [“Using the ROI Circle Tool” on page 304](#)
- [“Using the ROI Ellipse Tool” on page 315](#)
- [“Using the ROI Freehand Tool” on page 309](#)
- [“Using the Point Value Tool” on page 317](#)
- [“Using the User Tool Palette” on page 291](#)
- [“Calibrating Images” on page 319](#)

Annotations

To see the Annotations context menu, right click on popup and select **Annotations**.



A drop down list of the annotation tools displays.

Select the required tools to measure the images as described in the [“Annotating Images” on page 320](#) section.

Clearing Measurements and Annotations

- ▶ Right-click on an image and from the menu, select **Delete all Measurements and Annotations**.
- ▶ To clear an individual measurement or annotation, select it, right-click, and select **Delete**.

Viewing Existing Measurements and Annotations

If other users have previously made measurements or annotations on the image, these existing measurements and annotations are not shown at initial image display.

Since measurements and annotations are saved in presentation states, you can display the existing measurements or annotations by selecting existing presentation states. Right-click in the Exam Margin and from the menu, select **Presentation State** and then click on one of the available presentation states.

Using the Ruler Tool

You can use the **Ruler** tool to make linear measurements. For example, measure the diameter of a tumor as a baseline prior to treatment, or measure the diameter of the appendix to diagnose acute appendicitis.

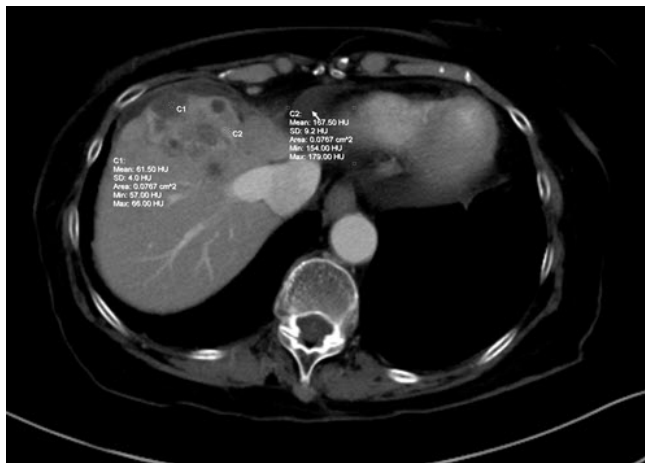
The measurement units for the **Ruler** tool if pixel spacing is specified in the DICOM tags are MM or CM (millimeter or centimeter) units. If the pixel spacing is not specified in the DICOM tags, then the measurement unit will only be in pixels. The level of accuracy for MM is tenths of a unit and for CM it is hundreds of a unit.

NOTICE

The measurement units (mm/cm) for the Ruler is configured in the User Preference-> Measurements. See [“Setting Measurements” on page 467](#)

1. Do one of the following to use the ruler tool:
 - Right-click on the image and from the menu, choose **Measurements** and then **Ruler**.
 - From the **User Tool Palette**, choose the **Ruler**  icon.
2. Click on the point from which you want to measure, and either move the cursor to the second point and click, or drag the cursor to the second point. The value next to the line indicates the length of the span in millimeters/centimeters or pixels depending on the available DICOM information.

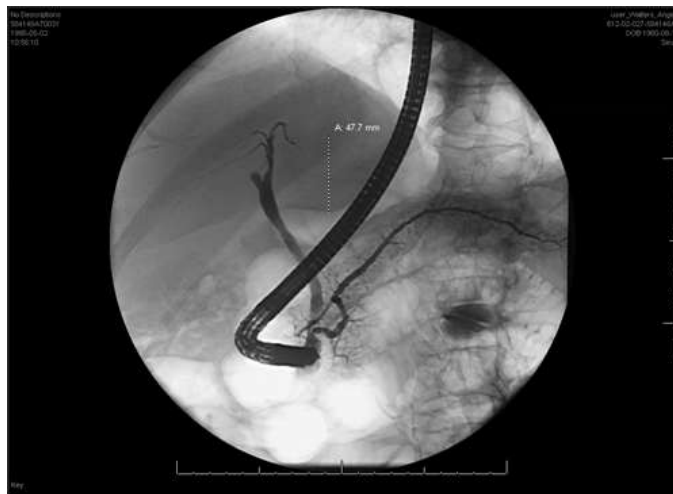
When you use the ruler tool to measure an image, the measurement (ruler) and the values are bound with a letter next to each measurement. This letter is specific to each measurement. The measurement values can also be moved away from the measurements. In such instances, the measurement and their values can be identified by the letters. The letters are preserved in the presentation state.



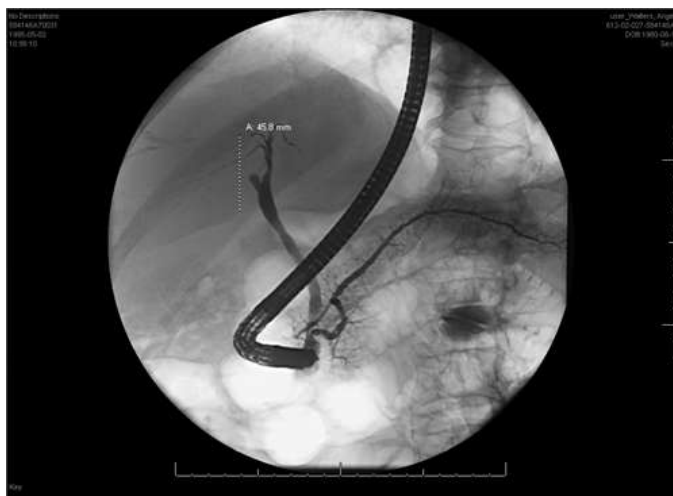
3. To edit an endpoint, select the line, then select the endpoint and drag it to the desired point on the image.
4. To move the line, select the line and drag it to the desired location.
5. To move the label, select it and drag it to the desired location.

The following set of figures shows the various actions you can take using the **Ruler** tool.

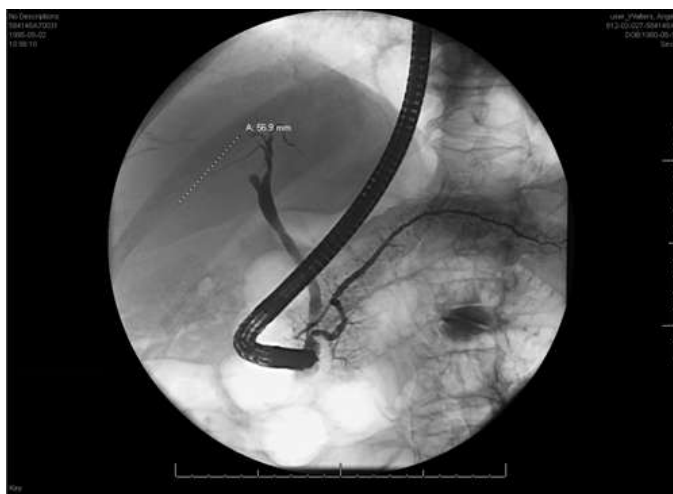
- Figure 1: Measuring a region with the ruler



- Figure 2: Select and drag the entire ruler without repositioning either end



- Figure 3: Reposition either end of the ruler by clicking and dragging on an endpoint



- Figure 4: Reposition the measurement value by clicking it and dragging to the desired position.



Using the Angle Tool

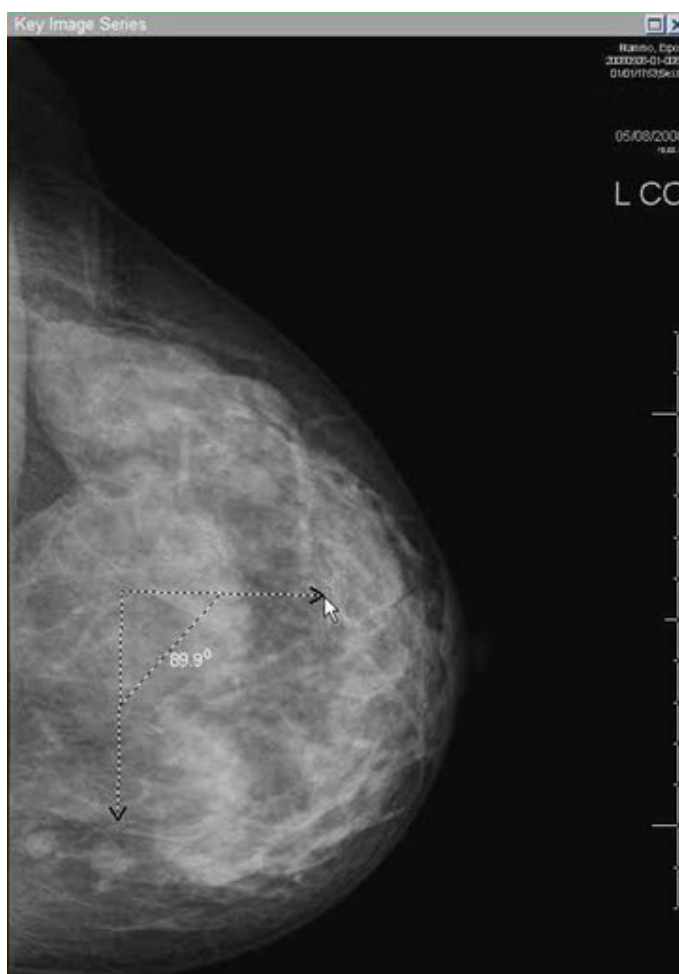
You can use the **Angle** tool to measure the angular alignment of two objects.

The measurement units for the **Angle** tool are degrees. The level of accuracy is based on the angle being computed as a floating point value and truncated to an integer. This implies a maximum angular error of approximately 0.5 degrees.

1. Do one of the following:
 - Right-click on the image and from the menu choose **Measurements**, and then **Angle**
 - From the **User Tool Palette**, choose the **Angle** icon
2. Click on the point you want to use for the angle's endpoint and move the cursor to the second point (the angle's apex) and click again.
3. Move the cursor to the second endpoint and click. The angle is complete and a box in the angle indicates the measurement of the angle in degrees.

The following set of figures shows the various actions you can take using the **Angle** tool:

- **Figure 1:** Create the angle by clicking on the point you want to serve as the angle's endpoint, moving the cursor to the second point (the angle's apex), clicking again, and moving the cursor to the other endpoint and clicking again.





- **Figure 2:** Move the entire angle without repositioning either endpoint by clicking on the apex and dragging it to the new location.



- **Figure 3:** Reposition either end of the angle tool by clicking on that end and dragging it to the new location. This enables you to measure wide angles where the apex is not on the image.



- **Figure 4:** Articulate the arms of the angle by clicking anywhere on them and dragging them to a new location.



Taking Cobb Measurements

Cobb measurements are in degrees, and the limits of accuracy are the same as the canonical angular measurements.

1. Do one of the following:
 - Right-click on the image and from the menu, choose **Measurements**, and then **Angle**
 - From the **User Tool Palette**, choose the **Angle** icon
2. Click on the point you want to use for the angle's endpoint and move the cursor to the second point (the angle's apex) and click again.
3. Move the cursor to the second endpoint and click. Notice that when the angle measurement is complete, each end of the angle lines is active, indicated by the small squares at the ends of the lines.
4. Select either part of the line to move and separate the point of the angle.

5. Move the upper portion of the angle measurement line to represent a parallel line, with the superior aspect of the uppermost vertebrae to be measured.
6. Move the lower line to represent a parallel line with the inferior aspect of the lower vertebrae to be measured. This angle measurement is the Cobb angle measurement.



Using the ROI Circle Tool

You can use the Region of Interest (ROI) Circle tool to measure the average data value for a circular region of an image.

The measurement units of the ROI Circle tool are determined by the modality. For example, with CT the pixel intensity represents Hounsfield units. For other modalities in the IntelliSpace PACS system, the pixels represent intensity. The units used are explicitly displayed, or in the case of pixels, left blank. Standard deviation is unitless and is a standard statistical measure of the dispersion of the values in the region of interest. The area measurement is CM^2 or MM^2 if pixel spacing is available; otherwise the units are pixels^2 . The values for these measurements are computed in floating point and displayed so that the ROI measurement is presented to two decimal places. This means that the accuracy is dependent on the magnitude of the values in the region. The area is accurate to approximately 1 part in 10^5 . The standard deviation is displayed to one decimal place, which means that the accuracy is dependent on the magnitude of the data.

NOTICE

You can specify the units (cm^2/mm^2) for the area measurement in the User Preference->Measurements. See [“Setting Measurements” on page 467](#)

For Region of Interest (ROI), the standard deviation is calculated by using the intensities of all pixels that are inside the ROI. If the image has slope/intercept, that is applied and then the standard deviation is calculated. Otherwise, the raw pixel data is used to find the standard deviation. This means that changing WW/WL will not change the measurement and that all pixels within the ROI are considered.

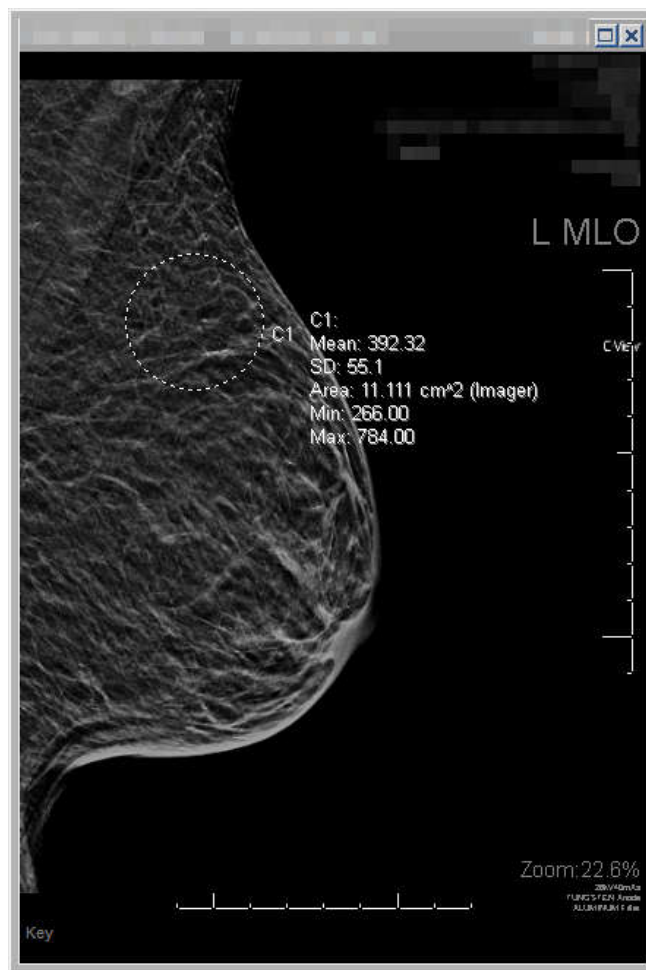


WARNING

Note the following:

- When performing an ROI measurement on an image that is displayed with a resolution smaller than the actual image (for example, an image in the rack for CT), IntelliSpace PACS may calculate the ROI using a sub-sample of the original image data. The value in this case is an accurate representation of the average measured pixel values represented by the interpolated sub-sampled image. This is a close approximation to the original pixel values.
- When IntelliSpace PACS calculates a measurement using a sub-sample of an image, the measurement result is displayed with a “~” (meaning approximate value) in front of it.
- When opening and displaying an image in full resolution, the ROI measurement values are recalculated. The “~” sign is no longer displayed, and there might be a small update/change from the measurement values displayed initially.

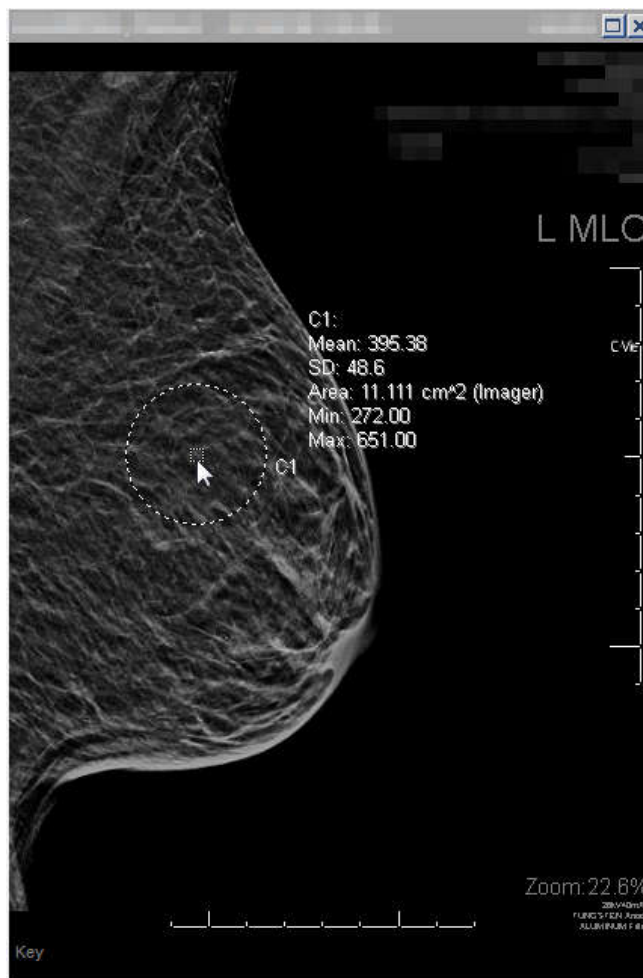
1. Do one of the following to use the ROI Circle tool:
 - Right-click on the image and from the menu, choose **Measurements**, and then **ROI Circle**
 - From the **User Tool Palette**, choose the **ROI Circle** icon
2. Click on a point from where you want to measure and drag the cursor to include the region you are interested in (see image below). The region is delineated by a circle, and ROI values next to the region indicate its mean, standard deviation (SD), area in centimeters squared/millimeters square. For a CT image the unit of SD will be in **HU** indicating Hounsfield units, and the area will be in centimeters squared or millimeters square.



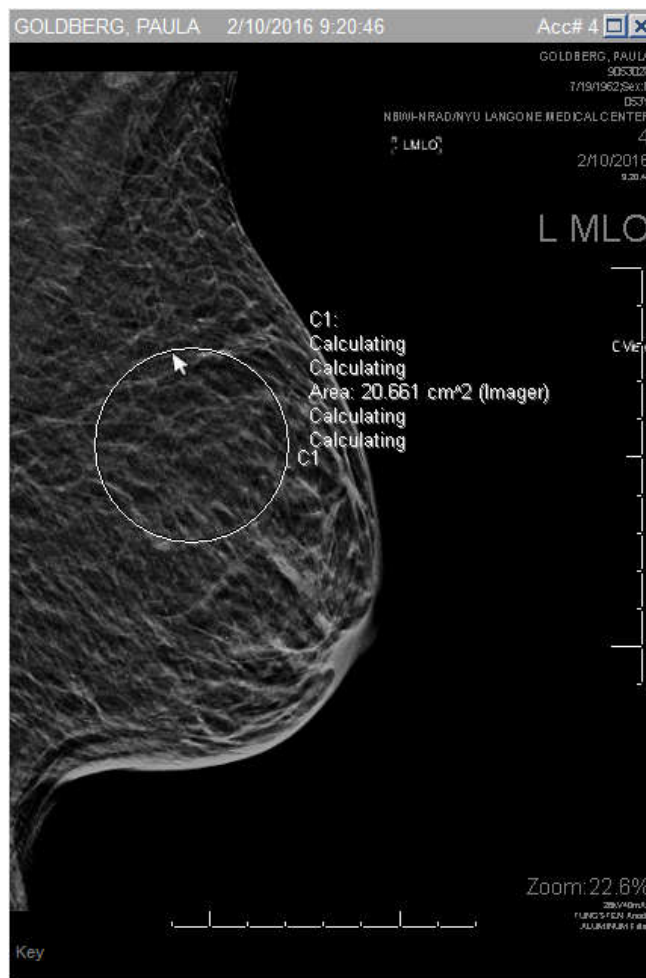
NOTICE

You can configure the measurement values to be displayed in the User Preference-> Measurements. See [“Setting Measurements” on page 467](#)

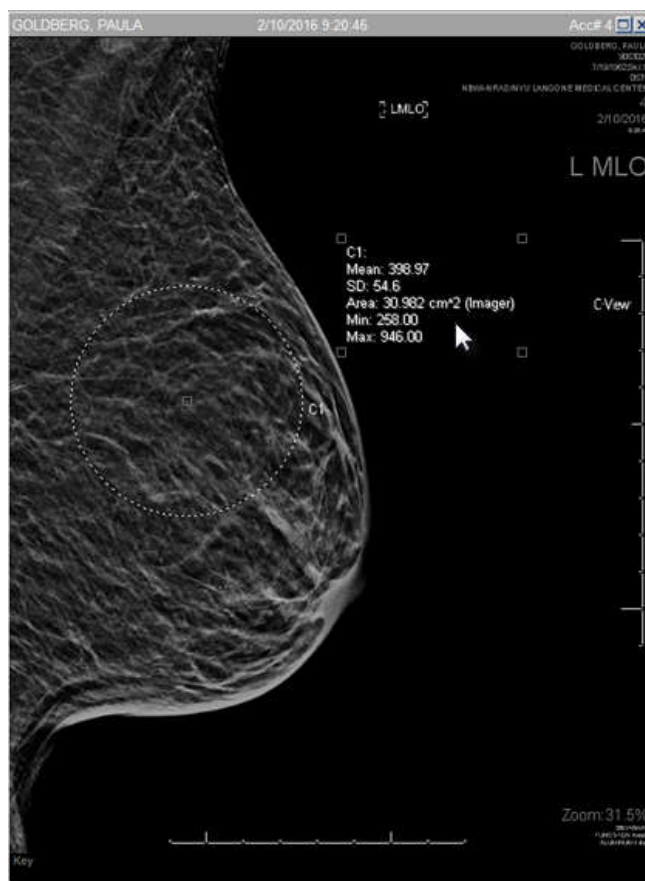
3. To move the entire region without altering its size, click on the ROI center and drag the region to the desired location (see image below).



4. To resize the region, click and drag the circle's perimeter (see image below).



5. The measurement values can be repositioned by dragging it to the required place in the image.



Using the ROI Freehand Tool

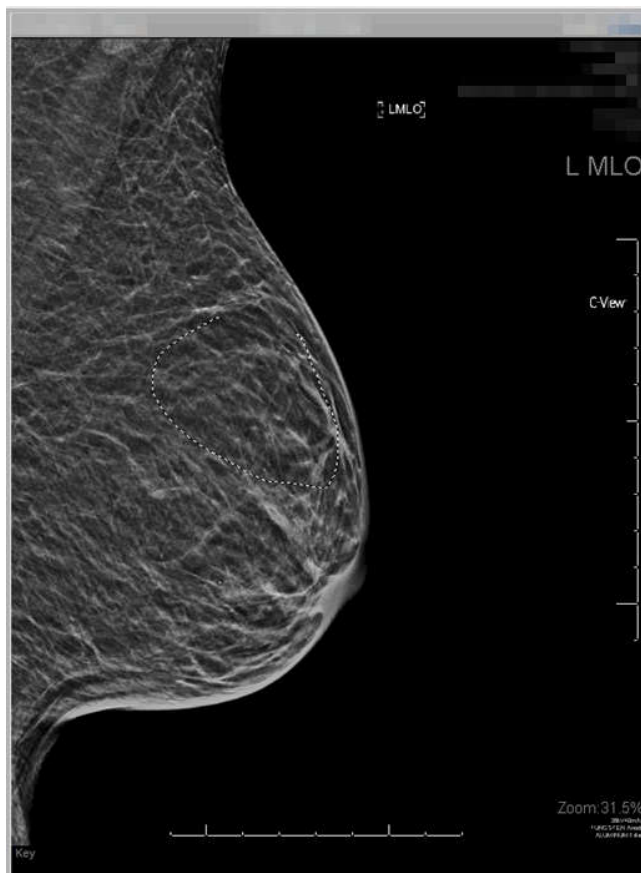
You can use the Region of Interest (ROI) Freehand tool to measure the average data value for a non-circular region of an image. The units and accuracy are identical to the ROI Circle tool.

For Region of Interest (ROI), the standard deviation is calculated by using the intensities of all pixels that are inside the ROI. If the image has slope/intercept, that is applied and then the standard deviation is calculated. Otherwise, the raw pixel data is used to find the standard deviation. This means that changing WW/WL will not change the measurement and that all pixels within the ROI are considered.

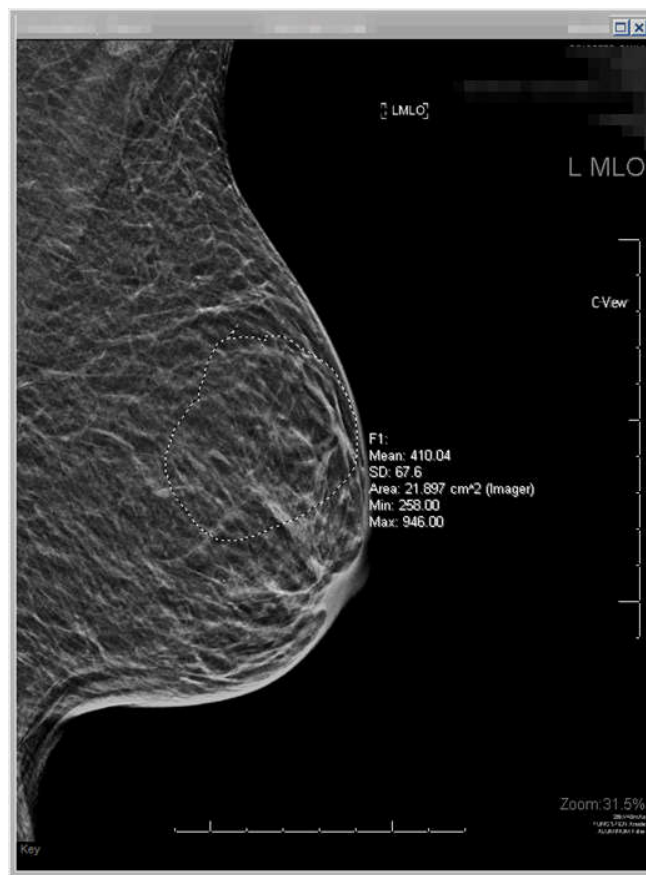
**WARNING**

Note the following:

- When performing an ROI measurement on an image that is displayed with a resolution smaller than the actual image (for example, an image in the rack for CT), IntelliSpace PACS may calculate the ROI using a sub-sample of the original image data. The value in this case is an accurate representation of the average measured pixel values represented by the interpolated sub-sampled image. This is a close approximation to the original pixel values.
 - When IntelliSpace PACS calculates a measurement using a sub-sample of an image, the measurement result is displayed with a “~” (meaning approximate value) in front of it.
 - When opening and displaying an image in full resolution, the ROI measurement values are recalculated. The “~” sign is no longer displayed, and there might be a small update/change from the measurement values displayed initially.
1. Do one of the following to use the ROI freehand tool:
 - Right-click on the image and from the menu, choose **Measurements**, and then **ROI Freehand**
 - From the **User Tool Palette**, choose the **ROI Freehand** icon
 2. Click and drag the cursor to enclose the desired area. The shape of your outline can be as complex as necessary, but the lines cannot intersect. When you release the mouse, the start and end points are automatically connected and the ROI values are displayed.



3. Release the mouse button when you have finished the outline. The **ROI Freehand** tool automatically connects the first and last points. The enclosed area of the outline is displayed in centimeters squared / millimeters squared or Hounsfield units for CTs.

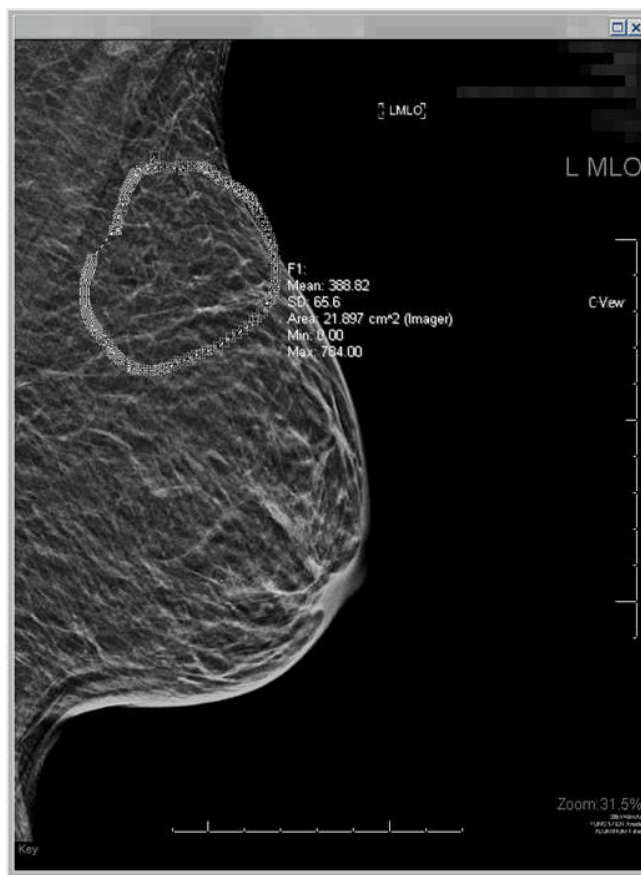
**NOTICE**

You can specify the units (cm^2/mm^2) for the area measurement in the User Preference->Measurements. See [“Setting Measurements” on page 467](#)

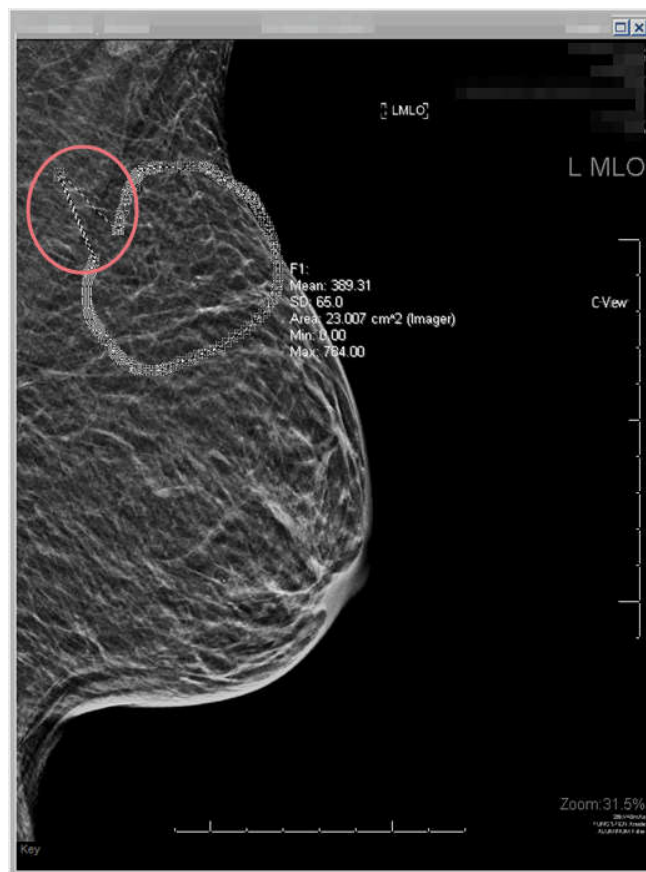
NOTICE

You can configure the measurement values to be displayed in the User Preference->Measurements. See [“Setting Measurements” on page 467](#)

4. Select any portion of the outline and drag to adjust the outline's contours.



5. Drag the outline to any part of the image by clicking on the center box and dragging to the desired location.



6. The measurement values can be repositioned by dragging it to the required place in the image.



Using the ROI Ellipse Tool

You can use the Region of Interest (ROI) Ellipse tool to measure the average data value for an elliptical region of an image. The units and accuracy are identical to [“Using the ROI Circle Tool” on page 304](#).

For Region of Interest (ROI), the standard deviation is calculated by using the intensities of all pixels that are inside the ROI. If the image has slope/intercept, that is applied and then the standard deviation is calculated. Otherwise, the raw pixel data is used to find the standard deviation. This means that changing WW/WL will not change the measurement and that all pixels within the ROI are considered.

**WARNING**

Note the following:

- When performing an ROI measurement on an image that is displayed with a resolution smaller than the actual image (for example, an image in the rack for CT), IntelliSpace PACS may calculate the ROI using a sub-sample of the original image data. The value in this case is an accurate representation of the average measured pixel values represented by the interpolated sub-sampled image. This is a close approximation to the original pixel values.
- When IntelliSpace PACS calculates a measurement using a sub-sample of an image, the measurement result is displayed with a “~” (meaning approximate value) in front of it.
- When opening and displaying an image in full resolution, the ROI measurement values are recalculated. The “~” sign is no longer displayed, and there might be a small update/change from the measurement values displayed initially.

1. Do one of the following to user the ROI Eclipse tool:
 - Right-click on the image and from the menu, choose **Measurements**, and then **ROI Ellipse**
 - From the **User Tool Palette**, choose the **ROI Ellipse** icon
2. Click on the image to display the **Ellipse** tool. The region is delineated by an ellipse, and ROI values next to the region indicate its mean, standard deviation (sd), and its area in centimeters squared or millimeters squared.

NOTICE

You can specify the units (cm²/mm²) for the area measurement in the User Preference->Measurements. See [“Setting Measurements” on page 467](#)

NOTICE

You can configure the measurement values to be displayed in the User Preference->Measurements. See [“Setting Measurements” on page 467](#)

3. To resize the region, click and drag the side handles.
4. To rotate the region, click and drag the corner handles.
5. To move the entire region without altering its size, click within the ROI and drag the region to the desired location.
6. The measurement values can be repositioned by dragging it to the required place in the image.

Using the Point Value Tool

The **Point Value** tool allows you to measure the value of data points at a specific point on the image. This feature gives the luminance value for single pixels of the original DICOM image. In other words, the value given is not related to what is being displayed on your screen. Rather, it is the value for a reference point which is mapped to the original DICOM image. The x value starts at zero (left side of image) and increases to the maximum value at the right side. The y value starts at zero (at the top of the image) and increases as you move the cursor toward the bottom of the image.

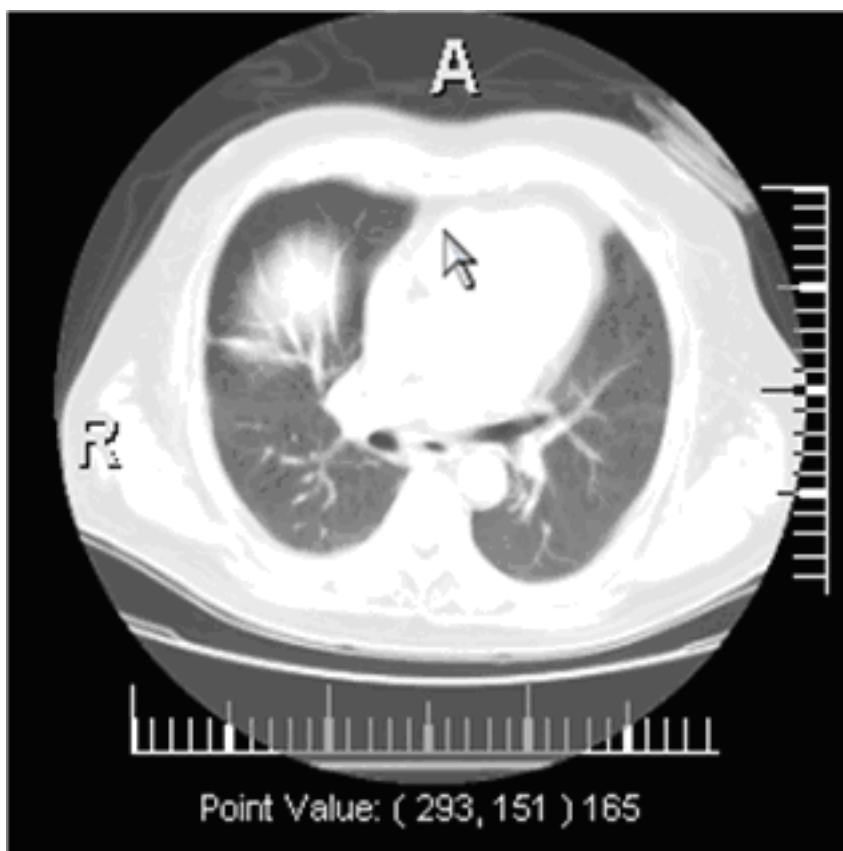
The measurement units depend on the modality type and the information provided in the DICOM image header, and will be either:

- Hounsfield units (sloped/intercept) for CT
- Mapped pixel intensity for VOI LUT
- Pixel intensity, as remapped by modality LUT or rescale slope/intercept processing as per DICOM standard

The level of accuracy is the following:

- True pixel value, no error for untransformed data
- Hounsfield units based on -1024 air as per DICOM standard, no error
- If slope/intercept is provided, then the pixel value is $Y = mx + b$, with floating point values rounded to the integer pixel value. This means that the error is dependent on the magnitude of the value, with a maximum deviation of ± 0.5 .

An Example of Point Value Tool :

**WARNING**

Note the following:

- When IntelliSpace PACS calculates a measurement using a sub-sample of an image, the measurement result is displayed with a “~” (meaning approximate value) in front of it.
- When opening and displaying an image in full resolution, the Point value measurement values are recalculated. The “~” sign is no longer displayed, and there might be a small update/change from the measurement values displayed initially.

1. Do one of the following:
 - Right-click on the image and from the menu, choose **Measurements**, and then **Point Value**.
 - From the **User Tool Palette**, choose the **Point Value** icon

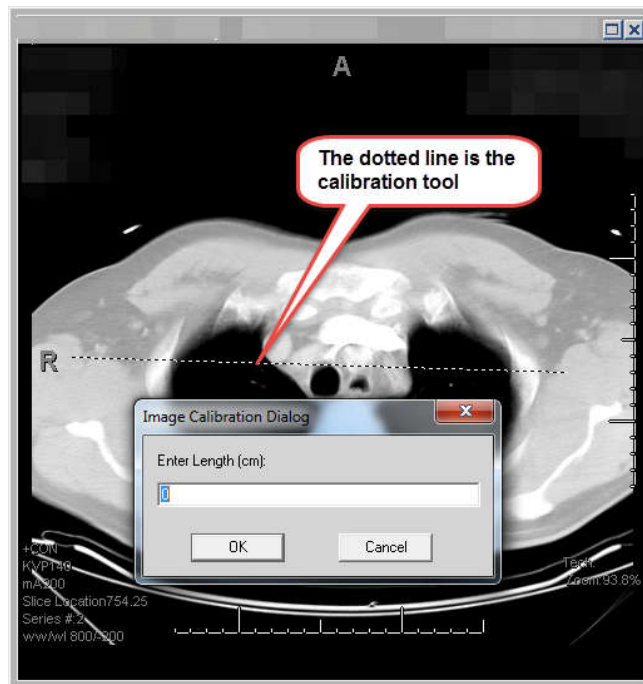
Screen overlay text labeled “Point Value” is displayed at the bottom of the image, followed by the x and y coordinates and a number that changes as you move the cursor over the image.

2. Click the image to disable the **Point Value** display.

Calibrating Images

The **Calibrate Image** tool allows you to calibrate the image on your screen for certain known measurements. You cannot use this tool with images that have valid DICOM-defined pixel spacing. Also, note that using the **Calibrate Image** tool on an image that has already been calibrated changes the measurement values for that image and displays a warning message. If the calibrate selection is gray, the system has received correct DICOM header information to automatically calibrate the measure distance tool.

1. Right-click the image and from the menu, select **Measurements**, and then **Calibrate Image**.
2. Place your cursor at the end-point of a known distance and drag to the end of the known distance.



3. Release the mouse button. The **Image Calibration Dialog** displays.
4. Enter the length of the known distance in millimeters and click **OK**. From now on, all measurements of distance and area are based on the newly defined scale. Also, the interactive scaled rulers are resized.

Taking Ultrasound Measurements

You can use IntelliSpace PACS to take length measurements on Ultrasound-B-Mode images. Measurements on Spectral, M-Mode, or Dual-B-Mode images are not supported. For these images, you can use the **Calibrate Image** tool to manually calibrate the images. See [“Calibrating Images” on page 319](#).

There are a few instances when measurements on ultrasound images might not be possible. For example, the scanner might not send IntelliSpace PACS the calibration information needed for the measurements.

Annotating Images

The **Text Annotation** tool is a quick and useful way to annotate images with shapes or text. For example, you can use annotations to document marker lesions for cancer trials. Annotations can make it easier for a clinician to interpret the image.

You can apply several annotation styles, including line, circle, arrow, triangle, text and freehand, as well as custom annotation styles. Note that you cannot use the annotations, measurement tools, and the **Localizer** tools at the same time. System Administrators can create and personalize annotation styles. See [“Setting Annotation Preferences” on page 477](#). Pre-defined annotations include: Bleed, Calcification, Cyst, Foreign Body, Fracture, Free Air, Mass, Node, Stone, and Tear.



Fig. 55: Annotation Tool example



CAUTION

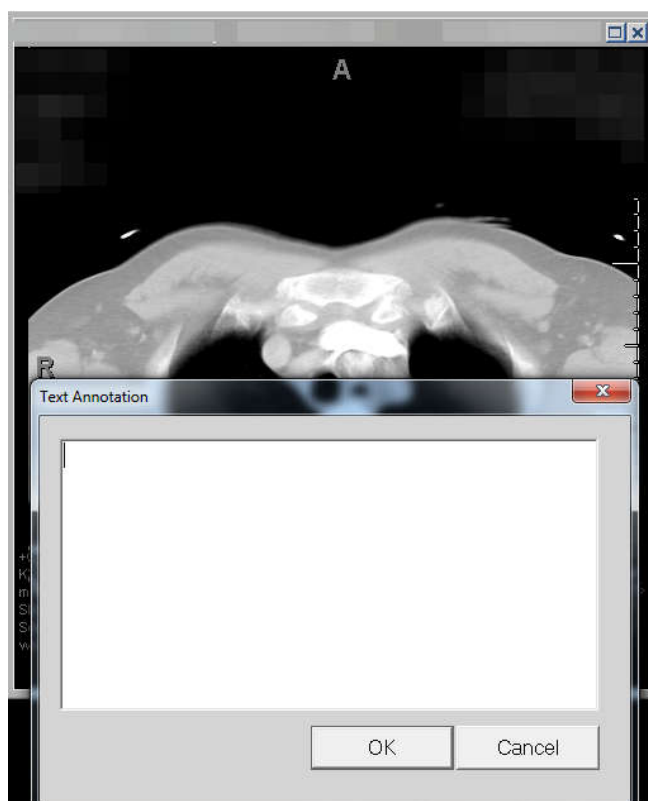
IntelliSpace PACS stores data in the fashion that it was received. Annotations and other changes are saved in presentation states and are available for subsequent viewers of these images within IntelliSpace PACS but the changes are not preserved when these are exported back to another DICOM device. This means that if you want to make permanent changes to any image, you need to do this on the modality itself and then send the image back to IntelliSpace PACS. Right-click the image or series you wish to annotate. Note the following:

- Annotations can be hidden, removed, or deleted from the screen.
- Presentation States do not export via DICOM export back to the modality.
- When printing, the Print Measurements and Annotations option must be selected.

1. Do one of the following:
 - Right click on the image and select **Annotations**, then the tool you want to use (for example, **Triangle**). See [“Using the Context Menu” on page 294](#).
- OR**
 - From the User tool palette, select the annotation you want to use (for example, **Line**). See [“Using the User Tool Palette” on page 291](#).
2. Click the part of the image where you want the annotation to start and drag to draw the selected shape.
3. Release the mouse button to complete the annotation.
4. To change the line style of the annotation, right-click the annotation and from the menu, select **Edit Line Style**. The **Edit Line Style** dialog box displays. Select the desired line style and click **OK**.

Adding a Text Annotation

1. Right-click the image or series you wish to annotate.
2. Do one of the following from the image menu:
 - Select **Annotations**, then **Text**.
 - Select **Measurement**, then **User Tool Palette**, then click the **T** icon. The cursor changes to cross hair.
3. In the image, click on the spot to create the text annotation.
The **Text Annotation** window opens.



4. Type your annotation into the text-box.
5. To change the font of the text annotation, right-click the text and from the menu, select **Edit Font**. The **Edit Font** dialog box displays.
6. Select the desired font and size and click **OK**.



CAUTION

When a text annotation is exported as a GSPS file, a 3rd party application might display the text at a different position and size. The DICOM standard does not strictly specify how a text annotation should be displayed, so each application can have its own interpretation. To point to a specific section of the image use the Arrow tool or create the text annotation with an arrow using Preferences / System Preferences / Annotations.

Adding a Circle Annotation

1. Right-click on the image or series you wish to annotate.
2. Do one of the following from the image menu:
 - Select **Annotations**, then **Circle**.
 - Select **Measurement**, then **User Tool Palette**.
 - Click the  icon in the tool palette.

- Pressing the right mouse button, draw a circle to mark the required area in the image.
 - To resize the circle annotation, click on the edges of the circle and drag to resize the circle.
3. Circle (semi circle) annotations can also be drawn at the edge of the image area.



4. Use the required tool from the tool palette to draw measurements and annotations within the circle annotation. For example, use the angle tool to draw inside circle annotation as shown below:



**CAUTION**

When a text annotation is exported as a GSPS file, a 3rd party application might display the text at a different position and size. The DICOM standard does not strictly specify how a text annotation should be displayed, so each application can have its own interpretation. To point to a specific section of the image use the Arrow tool or create the text annotation with an arrow using **Preferences / System Preferences / Annotations**.

Moving an Annotation

- Click anywhere on the annotation and drag it to the desired location.

Editing an Annotation

1. Double-click on the annotation. The **Text Annotation** dialog box displays, displaying the annotation.
2. Edit the annotation as desired.
3. Click **OK**.

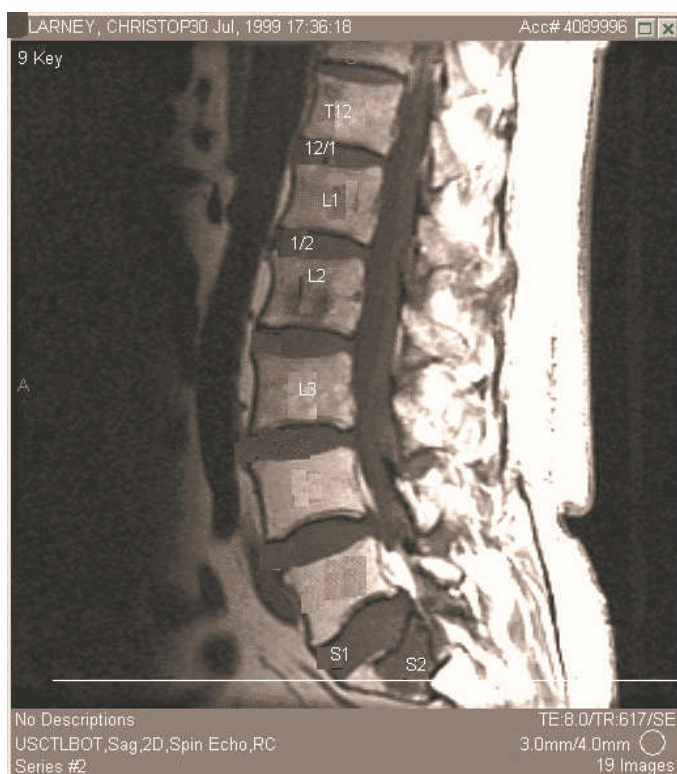
Spine Labeling

You can use the **Spine Labeling** tool to place markers at each vertebra or vertebral disc. You can save labels when you save the configuration as a Presentation State.

You would typically use this tool for an MR series to label the vertical bodies of a sagittal image and then turn on the **Scout** tool. You could then quickly determine the vertebral body you are looking at when you cine through an axial stack.

NOTE

The Spine Labeling tool should only be used on Sagittal or Coronal images.



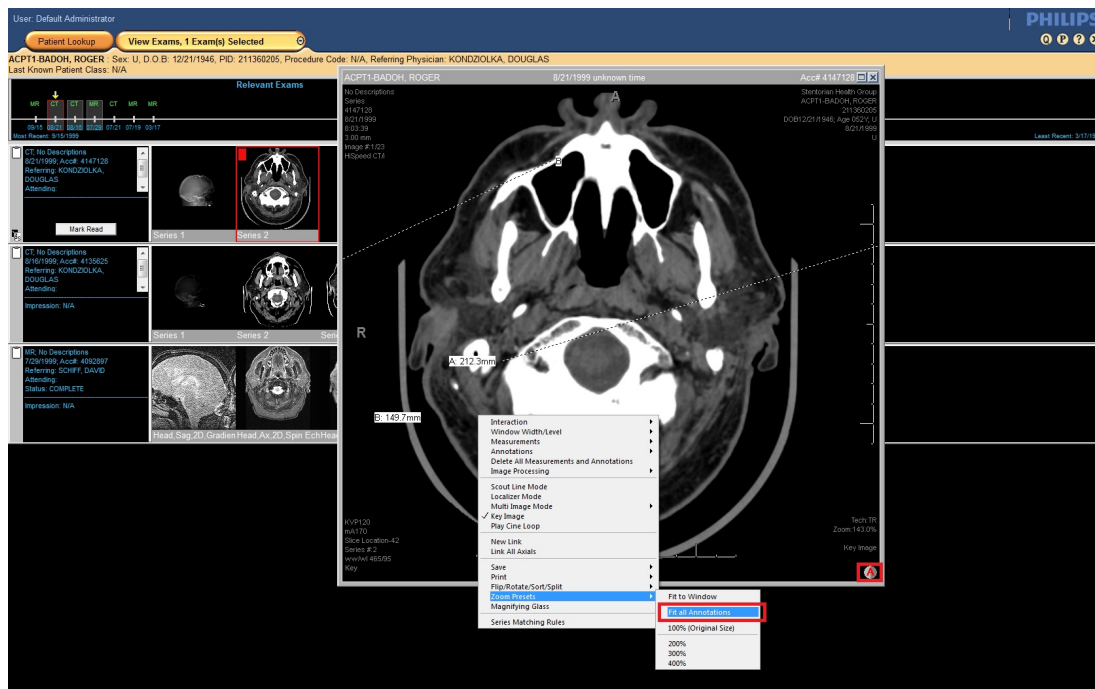
1. Right-click the series you wish to label.
2. From the menu, select **Annotations**, then **Spine Labeling**. The **Spine Label Panel** dialog box displays. For an MR stack, IntelliSpace PACS automatically sets the stack to the middle slice in the stack.
3. Do one of the following. Note that spinal labels L6 and T13 are not included in automatic labeling, but can be chosen manually from the **Spine Label Panel** dialog box.
 - Click on the desired label in the dialog box, then click the location in the image where you wish the label to be placed.
 - Highlight the label that you wish to begin with and begin clicking on the image.
 - Select the **Descending order** check box to change the order of automatic labeling. When unchecked, the labeling is in ascending order.
 - Click **Show All** or **Hide All** to show or hide all labels.
4. To remove an individual label, select it and click **Delete**. To remove all labels, click **Delete All**.

New Measurements and Annotations are Restricted to Image Area

New measurements and annotations cannot be created outside the image. If Measurement or Annotation is selected from the context menu and then clicked outside the image, the cursor is shifted inside the image area. While drawing measurements or annotations, if the mouse goes beyond the image area, the measurement or annotation will not be drawn. If you finish drawing outside the image area, the annotation points are restricted to the image area.

For legacy measurements or annotations:

- If a study is loaded with a presentation state which already has measurements or annotations created outside the image, a new notification icon  will be shown in the meta area. You can see the icon in the figure below (inside the red box).



- If the user opens an image in the diagnostic monitor/pop-up with Legacy measurements or annotations outside the image area, a new zoom preset 'Fit All Annotations' (as shown in figure) is provided in the context menu. If a notification icon for measurement or annotation outside the image area is visible, this option will be available.
- On selection of the Fit All Annotations option, the image will be zoomed out, such that it makes all the measurements or annotations in the image (inside/outside) visible in the current window.
- The legacy measurements or annotations which are outside image area are non-editable. User can only delete the annotations or measurements which are present outside image area.

Projections of Measurements and Annotations-Tomo (3D) to C View Images

This section will guide you to understand how the **Measurements** and **Annotations** drawn on the Tomo images will be projected automatically in the corresponding C view images for diagnostic purposes.

Do the following to draw the measurements and annotations in the Tomo image and to view the projection in the C view image:

1. Open a Tomo image.
2. Open the corresponding C view image.

NOTICE

The Frame of Reference and Dimensions (rows and columns) should match between the Tomo image and C View image for the mirroring to take place.

3. Do one of the following:
 - Right-click on the image and from the menu, choose **Measurements** and then the required tool.
 - From the **User Tool Palette**, choose the required tools.

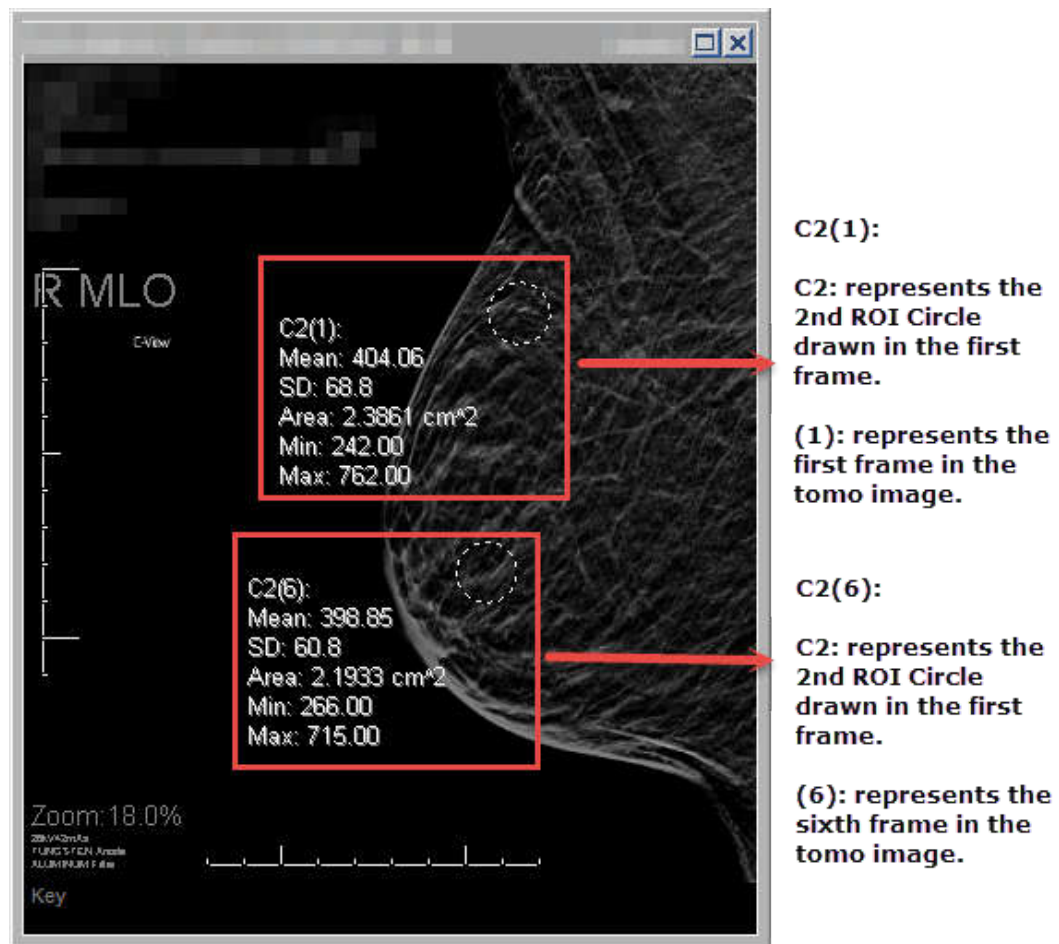
The following tools can be used:

Annotations	Measurements
Arrow	Angle
Circle	ROI Circle
Line	ROI Ellipse
Length / Scale	ROI Freehand
Freehand	
Text	
Triangle	
Ellipse	

As the measurements and annotations are drawn in the Tomo image, they will be automatically projected in the corresponding C view image.

The following points should be noted when projecting the measurements and annotations from Tomo to C View images:

- The projected measurements and annotations cannot be edited/deleted in the C View images, rather it can be edited/deleted only from the Tomo images.
- The ROI measurements in the Tomo images will have the slice / frame numbers in the brackets. In the C view images, these frame numbers will help to identify the frame in which the measurement is drawn.



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- The projected measurements and annotations in the C View images can be edited/deleted only if they are edited/deleted in the slice/frame they were created in the Tomo image. For example, a measurement is drawn in the "4th frame" of the Tomo image and a "Copy to All" is selected to copy the measurement/annotation to all the frames. In such instances, this measurement can be deleted from the corresponding C View only on deleting the measurement from "4th frame of the Tomo image and cannot be deleted from any other frames it was copied to.
- The projected measurements and annotations in the C View images may not have the same values as in the Tomo images.
- The projected measurements and annotations in the C view image will not be saved as part of the Presentation State. But, the mirrored measurements and annotations will be retrieved when the PS is loaded.
- In instances of multiple measurements and annotations in the different frames of the Tomo images, there might be overlapping of the measurements and annotation in the C view images,
- The projected measurements and annotations will not appear in the third party viewer after a local export.

16 Philips IntelliSpace Clinical Applications

Overview

Philips IntelliSpace Clinical Applications is an image processing workstation software package designed to run on standard PC hardware. The hardware required is made up of "off-the-shelf" standard computer components. Philips IntelliSpace Clinical Applications software receives image data from medical scanning devices, such as CT and MRI, or from image archives. Philips IntelliSpace Clinical Applications performs viewing, image manipulation, communication, printing, and quantification of images.

Philips IntelliSpace Clinical Applications include the following applications:

- IntelliSpace Volume Vision
- IntelliSpace CT Colonography
- IntelliSpace CT Pulmonary Embolism Assessment
- IntelliSpace CT/MR Vessel Explorer

IntelliSpace Volume Vision is the 2D/3D/4D enhanced viewing application part of the IntelliSpace PACS Clinical Applications R8.2, bundled with the comprehensive IntelliSpace PACS solution.

IntelliSpace CT Colonography (CT Colonography), IntelliSpace CT Pulmonary Embolism Assessment (CT Pulmonary Embolism Assessment), and IntelliSpace CT/MR Vessel Explorer (CT/MR Vessel Explorer) are applications for specific types of viewing. Note that these three clinical applications are sold separately and require a license. If you do not have a license for one or more of these three clinical applications, the entries will not appear under Philips Applications when you right-click the IntelliSpace PACS canvas.

About IntelliSpace Volume Vision

IntelliSpace Volume Vision (Volume Vision) adds real time 3D functionality (MIP, MPR and Volume Rendering). Once Volume Vision is installed, you can access these tools by right-clicking on a thumbnail image in the IntelliSpace PACS Exam Rack or in an image pop-up window or on a federated cached exam and selecting one of the following options:

- **MIP** (Maximum Intensity Projection): The maximum voxel value encountered along each ray is displayed on the projection plane (plane of the monitor). MIP is commonly used for vascular studies and 3D rotational angiography.
- **MPR** (Multi-Planar Reformation): A post-processing technique which produces new slices from a stack of images. The original images are stacked one on top of the other. MPR then produces a reconstructed plane of the anatomy in any desired orientation. When an MPR slice is widened, it becomes a slab. The result is then identical to an average intensity projection.

- **Volume Rendering:** Volumes are derived via a post-processing technique, which uses complex virtual ray methods to produce three-dimensional objects from a stack of images. The original images are stacked one on top of the other. A classification is applied to visualize a selected surface within the volume.

The MPR/MIP toolset includes:

- Real Time Interactive orthogonal, oblique and double-oblique cuts
- Curved MPR with intelligent task guidance
- Interactive slab thickness adjustments
- Side by side MPR/MIP for current and prior exams
- Triangulation (linked cursors)
- Window/Level presets, Zoom/Pan, interactive edge enhancement
- Measurement tools (distance, (open) angle, points, profile, free contour, vessel diameter)

Volume Rendering includes:

- High resolution shaded volume rendering technique
- Standard views and interactive rotations
- Predefined 3D classification gallery
- Interactive classification (opacity threshold and color) adjustment
- Interactive slab thickness adjustment (quick segmentation)
- MPR or MIP reference images (with linked cursors)
- 3D Measurement tools (same as above plus multi-slice contours)

NOTE

Patient data that has been anonymized in IntelliSpace PACS is not anonymized in Volume Vision or third-party applications. Also, printing is not supported in Volume Vision. As a workaround, you may have to do a secondary capture of the MPR, send data back to IntelliSpace PACS, then print.

Starting Volume Vision

When you view images in IntelliSpace PACS with Volume Vision, image and metadata are transferred from IntelliSpace PACS to Volume Vision, and Volume Vision is displayed on top of IntelliSpace PACS. A progress bar displays as the image is being transferred.

NOTE

Volume Vision does not support any printing. As a workaround, you can do a secondary capture of the MPR, send data back to IntelliSpace PACS, and then print from IntelliSpace PACS.

NOTE

Federated cached exams can be opened in volume vision.

To open one or more series, do the following:

1. In the IntelliSpace PACS Exam Rack, select one or more series: press and hold **Shift** and click on the thumbnails.
2. Right-click on one of the selected thumbnail images and select one of the following options:
 - **MPR** (Multi-Planar Reformat)
 - **MIP** (Maximum Intensity Projection)
 - **Volume rendering**
3. Volume Vision starts.
4. Use the tools available in Volume Vision. Refer to the Volume Vision online help for detailed information on the available features.

Alternatively, you can open a complete exam in Volume Vision.
5. In the IntelliSpace PACS exam rack, right-click on the **Exam Margin** and select **Volume Vision**.
6. Volume Vision starts.

NOTE

- Volume Vision supports only the following image types: CR, CT, CX, DR, DX, MG, MR, RF, US, XA, and SC. Other image types are not supported.
- Scanned documents are not loaded in Volume Vision.
- If the system does not have enough memory to load all images, Volume Vision displays a warning message that you must set a volume of interest that fits into memory. See the Volume Vision online help for more information.

**WARNING**

- If you modified the images in the IntelliSpace PACS environment, these modifications will not be available in Volume Vision.
- In Volume Vision, in combination with IntelliSpace PACS Enterprise, all modifications are available only during the current session. When you exit Volume Vision and return to the IntelliSpace PACS environment, all your work is lost.
- To store the results of your work as photos, use the Capture tool in Volume Vision. See the Volume Vision online help for more information.
- You can also use the Capture tool to save the results of MIP, MPR, and Volume rendering, so that your work can be restored and reused during any future session of Volume Vision. In addition, you can save movies as originals, photos, or AVI files. See the Volume Vision online help for more information.
- In Volume Vision, in combination with IntelliSpace PACS Radiology, all modifications on volume objects are stored and available in the next session of Volume Vision.

Hold and Resume Volume Vision Sessions

Patient data displayed in Volume Vision always corresponds to the patient displayed on the IntelliSpace PACS canvas.

Therefore, if you select another patient in IntelliSpace PACS while the Volume Vision session is still open, Volume Vision will become iconized and the session will be temporarily locked. You can access that Volume Vision session again only when you select the corresponding patient in IntelliSpace PACS.

You can also choose to temporarily preserve a specific session of Volume Vision:

- From within Volume Vision, from the **Session** menu, select **Hold**.

Exiting Volume Vision

To exit Volume Vision and return to IntelliSpace PACS, do one of the following:

- To exit Volume Vision and save the reconstructed image back to the IntelliSpace PACS server, use the **Capture** tool in Volume Vision.
- To save the work you are doing on the image in Volume Vision and return to it later in the IntelliSpace PACS session, from within Volume Vision, select **Session**, then **Hide**.
- To exit Volume Vision and return to IntelliSpace PACS, from the **Session** menu, select **Exit**.



WARNING

- In Volume Vision, in combination with IntelliSpace PACS Enterprise, all modifications are available only during the current session. When you exit Volume Vision and return to the IntelliSpace PACS environment, all your work is lost.
- To store the results of your work as photos, use the Capture tool in Volume Vision. See the Volume Vision online help for more information.
- You can also use the Capture tool to save the results of MIP, MPR, and Volume rendering, so that your work can be restored and reused during any future session of Volume Vision. In addition, you can save movies as originals, photos, or AVI files. See the Volume Vision online help for more information.
- In Volume Vision, in combination with IntelliSpace PACS Radiology, all modifications on volume objects are stored and available in the next session of Volume Vision.

NOTE

When you exit IntelliSpace PACS, you also exit from Volume Vision.

Analysis

NOTE

Depending on your licenses and the type of images that you’ve selected for analysis, some of the analysis options may be disabled.

1. From within Volume Vision, select one or more views to be analyzed.
2. On the main menu bar, click **Analysis** and then point to the required analysis type. See the following table for the available analysis types.

Application Icon	Analysis Types
	Philips IntelliSpace CT Colonography See “Philips IntelliSpace CT Colonography” on page 334
	Philips IntelliSpace CT Pulmonary Embolism Assessment See “Philips IntelliSpace CT Pulmonary Embolism Assessment” on page 335
	Philips IntelliSpace CT/MR Vessel Explorer See “Philips IntelliSpace CT/MR Vessel Explorer” on page 336

1. A new screen with the selected application is displayed.

2. Click the **Exit** button in the application to return to the main viewing window.
- OR -
1. In the IntelliSpace PACS exam rack, right-click the image, select **Philips Applications**, and then select the required analysis type. See the preceding table for the available analysis types.
2. A new screen with the selected application is displayed.
3. Click the **Exit** button in the application to return to the IntelliSpace PACS exam rack. The images in the exam rack are updated with the results of your work.

Philips IntelliSpace CT Colonography

Philips IntelliSpace CT Colonography (CT Colonography) is an application that supports you in the detection of polyps in the colon.

The application is designed to work on CT scans acquired with CT Colonography scanning protocols. The CT scan should contain at least 30 images.

CT Colonography supports primary 2D or primary 3D hanging protocols for inspection of the colon. You can do either of the following:

- Detect lesions in the original grey scale images with a reference link to a 3D image.
- Inspect the surface of the colon wall in a primary 3D environment with reference links to grey scale images.

In both environments, it is possible to do a comparison reading of matched series such as supine and prone or previous and current.

Starting CT Colonography

NOTE

If the selected series are not suitable for CT Colonography, Volume Vision opens instead of CT Colonography.

1. In the IntelliSpace PACS exam rack, select one or two abdomen scans: press and hold **Shift** and then click the thumbnail images.
2. Right-click one of the thumbnail images, select **Philips Applications**, and then select **CT Colonography**.
- OR -
1. In the IntelliSpace PACS exam rack, select one or two abdomen scans: press and hold **Shift** and then click the thumbnail images.
2. Start Volume Vision. See [“Starting Volume Vision” on page 330](#).

3. In the main menu, click **Analysis** and then click **CT Colonography**. The default CT colon hanging protocol is applied to the selected data. See [“Analysis” on page 333](#).
4. Alternatively: Apply a CT colon hanging protocol. Do one of the following:
 - In the main menu, click **Protocols** and then click **Hanging protocols**.
 - Click the **Hanging protocols** button on the main toolbar.

For more information about CT Colonography, see the Philips IntelliSpace Clinical Applications online help.

When CT Colonography is started:

- the CT colon hanging protocol is applied to the selected data
- dedicated classifications are applied to the views
- the colon is automatically segmented
- a path through the colon is automatically generated

Closing CT Colonography

To close CT Colonography, from the main menu, click **Session** and then click **Exit**.

Philips IntelliSpace CT Pulmonary Embolism Assessment

Philips IntelliSpace CT Pulmonary Embolism Assessment (CT Pulmonary Embolism Assessment) is a postprocessing application for use in viewing, assessing and reporting computed tomography (CT) thorax studies. The optimized visualizations of CT Pulmonary Embolism Assessment, comprised of linked MPR views, are intended to support Radiologists and referring Physicians in localizing and reporting on lung emboli.

CT Pulmonary Embolism Assessment can be used for rapid risk assessment in patients with suspected acute pulmonary embolism. The assessment includes the possibility of measuring the ratio of the ventricular dimensions.

Evidence from scientific studies suggests that there is a relationship between right ventricular enlargement and prognosis of the patient.

Starting CT Pulmonary Embolism Assessment

1. In the IntelliSpace PACS exam rack, select one or more series: press and hold **Shift** and then click the thumbnail images.
2. Right-click the image, select Philips Applications, and then select Pulmonary Embolism Assessment.

NOTE

If the selected series are not suitable for CT Pulmonary Embolism Assessment, Volume Vision opens instead of CT Pulmonary Embolism Assessment.

- OR -

1. In the IntelliSpace PACS exam rack, select one or more series: press and hold **Shift** and then click the thumbnail images.
2. Start Volume Vision. See [“Starting Volume Vision” on page 330](#).
3. On the main menu, click **Analysis**, and then click **Pulmonary Embolism Assessment**. See [“Analysis” on page 333](#).

The default hanging protocol of CT Pulmonary Embolism Assessment, for your hardware setup, is applied to the scan. The Main axial and orthogonal MPR zoomed views are created.

All views are MPRs. The application requires complete original CT scans (no missing slices) with a minimum of 30 slices and a maximum slice thickness of 2 mm to present all views.

Visualization is possible with slice thickness greater than 2 mm.

When you start CT Pulmonary Embolism Assessment, the hanging protocol used depends on the following criteria:

- The selected scan (dataset) or scans.
- Your user profile (permissions).
- The default hanging protocols.

The automatically applied default hanging protocol depends on

- The number of monitors on your reading station
- A weight factor that prioritizes protocols matching the same criteria

See the Philips IntelliSpace Clinical Applications online help for an overview of the standard hanging protocols available for CT Pulmonary Embolism Assessment.

- Specific actions for CT Pulmonary Embolism Assessment that are automatically applied:
 - The application automatically detects the lungs and displays the main axial MPR view.

Once started, the name **Philips IntelliSpace CT Pulmonary Embolism Assessment** is displayed in the main toolbar.

Closing CT Pulmonary Embolism Assessment

To close CT Pulmonary Embolism Assessment, in the main menu, click **Session**, and then click **Exit**.

Philips IntelliSpace CT/MR Vessel Explorer

Philips IntelliSpace CT/MR Vessel Explorer (CT/MR Vessel Explorer) is a post-processing application that supports:

- The visual inspection of vessels by simple navigation along vessel structures in CTA/MRA data acquired for the optimization of vessel visualization,
- Manual and semi-automatic measurements,

- The storage of measurements and visualizations into the form of a secondary capture series.

Starting CT/MR Vessel Explorer

CT/MR Vessel Explorer can be started from

- IntelliSpace PACS canvas
- Volume Vision

If you start CT/MR Vessel Explorer from a volume view in Volume Vision, any settings that you have applied to the MIP/MPR or volume rendering will be automatically taken over in the inspection view of CT/MR Vessel Explorer. This allows efficient review and analysis.

1. In the IntelliSpace PACS exam rack, right-click the thumbnail image of the series that you want to inspect, select **Philips Applications**, and then select **Vessel Explorer**.

NOTE

If the selected series are not suitable for CT/MR Vessel Explorer, Volume Vision opens instead of CT/MR Vessel Explorer.

- OR -

1. In the IntelliSpace PACS exam rack, right-click the thumbnail image of the series that you want to inspect, and select **Philips Applications > Vessel Explorer**.
2. CT/MR Vessel Explorer starts. The images are displayed according to the settings in the user profile.
3. If required, prepare and modify a MIP/MPR/Volume-rendered image. Select the volume view.
4. In the main menu, click **Analysis**, and then click **Vessel Explorer**. See [“Analysis” on page 333](#).

NOTE

If the system does not have enough memory to load all images, CT/MR Vessel Explorer shows a warning message that you must set a volume of interest (VOI) that fits into memory. See the Philips IntelliSpace Clinical Applications online help for more information.

For more information about CT/MR Vessel Explorer, see the Philips IntelliSpace Clinical Applications online help.

Closing CT/MR Vessel Explorer

To close CT/MR Vessel Explorer, click **X** on the Vessel Explorer application tab.

Configuring Automatic Startup

You can define rules in Philips IntelliSpace PACS for automatic start-up of IntelliSpace PACS Clinical Applications. These rules link exams to a clinical application. If you double-click an exam in an IntelliSpace PACS worklist, the linked application starts automatically.

A rule that links an exam to an application has the following attributes:

- Modality (required)
- Possible modalities are:
 - CR
 - CT
 - CX
 - DR
 - DX
 - MG
 - MR
 - RF
 - US
 - XA
- Application (required)
- Body part (optional)
- Exam description (optional)

NOTE

The body part and the exam description of an exam are used as defined in the IntelliSpace PACS properties. You can find them in the 'Edit Exam' dialog box in IntelliSpace PACS. To open this dialog, right-click an exam in a worklist and select 'Edit Exam'. The body part of the exam is displayed in the 'Body Part' field. The exam description is displayed in the 'Description' field. See [“Editing Exams” on page 121](#).

The rule is applied as follows: if the modality, body part, and exam description of an exam match the modality, the body part and the exam description of the rule, the application defined in the rule starts automatically when you double-click the exam in an IntelliSpace PACS worklist.

If two or more rules match one exam, the rule with the strongest match is applied. The more attributes of a rule that are defined, the stronger the possible match of the rule is.

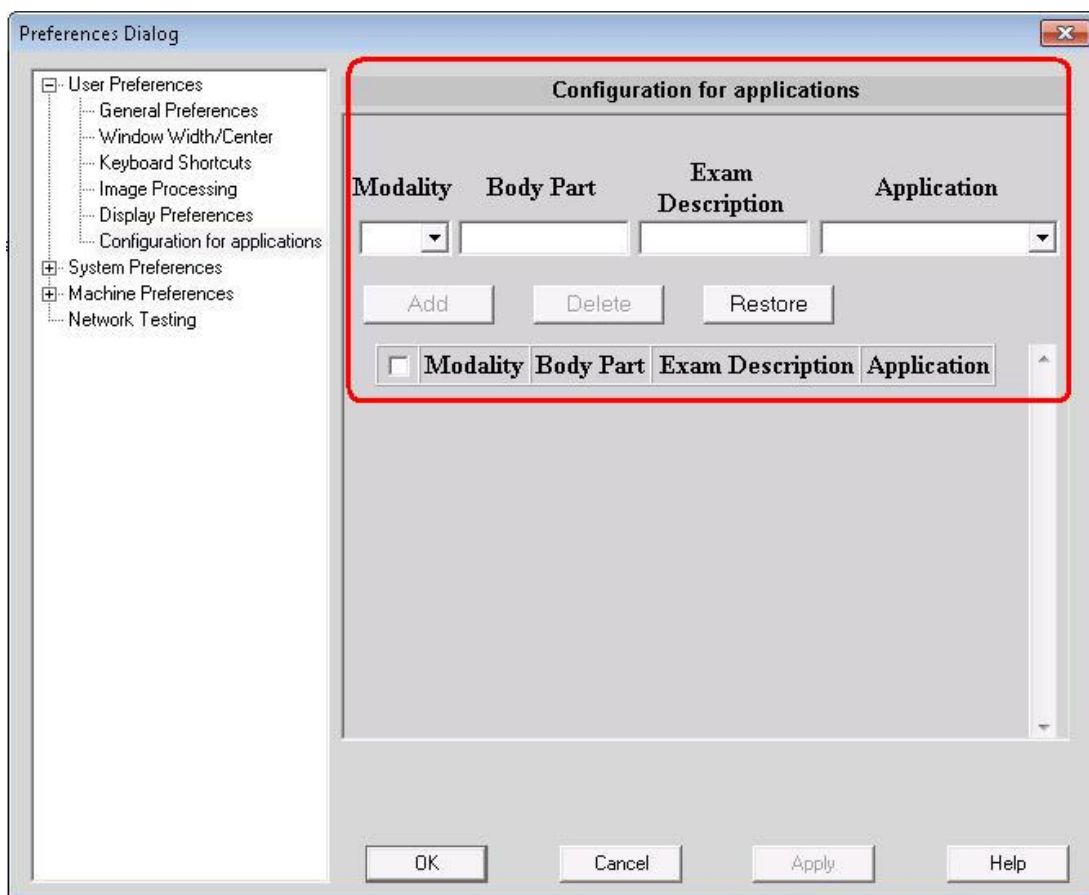
NOTE

If you select two or more exams from an IntelliSpace PACS worklist, the automatic start-up only applies to the first exam.

Adding and Deleting Rules

You can add and delete rules in the Preferences dialog in IntelliSpace PACS. To open this dialog, do the following:

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip. The Preferences dialog displays.
2. Click the **+** sign next to **User Preferences** in the Preferences dialog.
3. Select **Configuration for Applications**. The Configuration for Applications panel displays in the right pane of the Preferences dialog.



For more information on adding and deleting rules, see [“Setting Applications Configuration Rules”](#) on page 464.

17 Retrieving and Exporting Studies

IntelliSpace PACS includes the following tools you can use to retrieve and export studies:

- **Media Viewer:** See [“Using the Media Viewer” on page 341](#)
- **Print to Paper:** See [“Printing to Paper” on page 346](#)
- **Print to DICOM:** See [“Printing to DICOM” on page 347](#)
- **Export via DICOM:** See [“iExport for DICOM Export” on page 348](#)
- **iQuery:** See [“iQuery for DICOM Study Retrieval” on page 358](#)

Using the Media Viewer



WARNING

- Do not use CDs and DVDs as a permanent or fail-safe archive for patient data. When storing data on a CD or DVD, IntelliSpace PACS does not verify that the patient data is correctly stored and retrievable. In addition, CDs and DVDs may deteriorate over time. For long-term storage, all patient data should be stored in an archiving system (such as a PACS).
- Do not diagnose from media such as CDs or DVDs.

The **Media Viewer** allows you to export an encapsulated version of IntelliSpace PACS and the patient exams you choose to various media, including CD, DVD, USB device, and external hard drives. You can use the Media Viewer for exams with anonymous patient information. See [“Working with Anonymized Exams in the Media Viewer” on page 345](#). The media export shall not allow a user to add more than 100 exams to the list by default.

NOTICE

The user shall be provided with registry key option to change this upper limit of total number of exams to export. To change the upper limit of media exam export, the user shall manually add a key ‘MediaExportItemCount’ of type DWORD in the path HKLM\SOFTWARE\Stentor and add the desired value for this key. iSite client shall be restarted to make this value effective. The installer shall not create/remove this key in the registry. The media export may not be guaranteed to work with large number of exams to export as there is an upper limit to the worklist file size due to encryption. The resulting behavior is unspecified and may include failures or crashing.

The patient images are all lossless (unless the IntelliSpace PACS Server received lossy images from another source). Diagnostic reports and presentation states are exported with the patient exams. Exam notes, allergies, other clinical information, and some diagnostic report fields are not exported to the CD or other media.

The **Media Viewer** provides for easy distribution but, most importantly, no internet connection is needed to view patient exams. Note that if you log out when exam links are still open in the Media Viewer, the links are lost and have to be redone when you log back into IntelliSpace PACS.

You can burn CDs and DVDs directly from IntelliSpace PACS without having to exit the application.

NOTE

CAD markers are not included when you copy images to a CD/DVD using the Media Viewer.

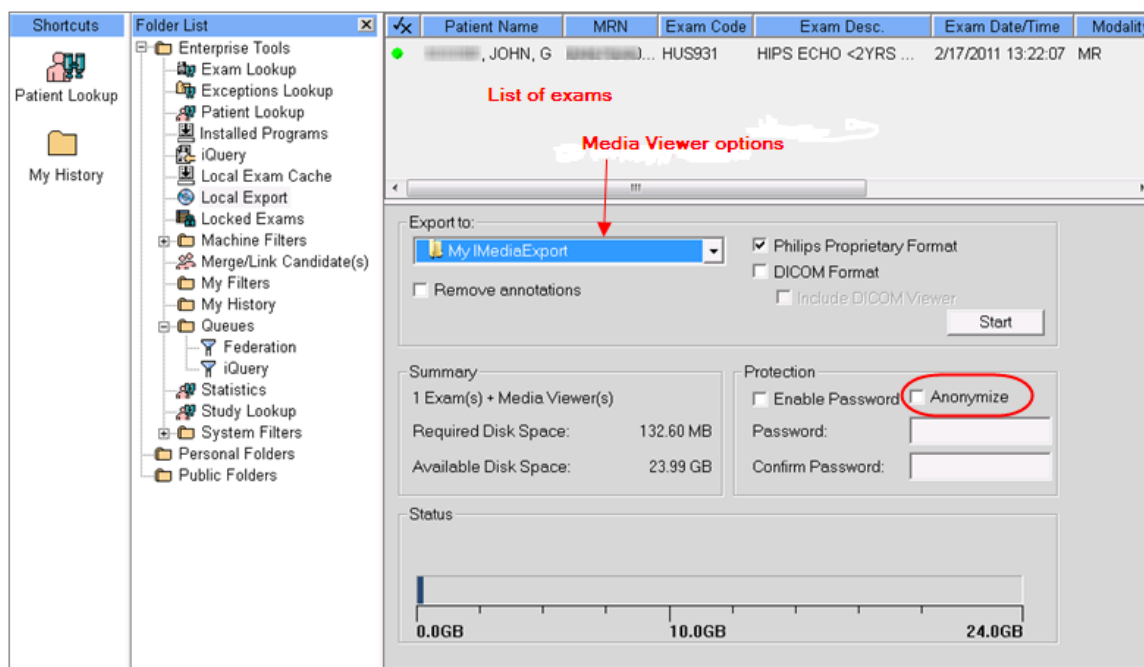


Fig. 56: Media Viewer

Exporting Exams to CD or Other Media

When you select **Local Export**, the top part of the window displays the list of exams that have been added to the Local Export folder, and the bottom part contains the controls you use to export the exams.

If you drag exams that have been made anonymous into the Local Export folder, the exams copied to the CD or other media will remain anonymous. You can view and change the properties for the randomly generated patient information when the exam is listed at the top of the Media Viewer window.

NOTE

When burning studies to CD or other media, or viewing the images, the date/time the CD was burned will always display as the local timezone of the machine in which the CD was burned, even if the media is opened on a machine in a different time zone.

To add exams to the **Media Viewer**, do one of the following:

- Drag exams from a filter or list of exams to the **Local Export** folder.
- On the Canvas Page, do the following:
 - Right-click an exam listed in the Patient History Timeline or an exam row margin.
 - From the right-click menu, select **Add Exam to Folder**.
 - In the Folder Dialog, **Local Export** is selected by default. Click **OK**.
 - The exam is added to the **Exam List** in the Media Viewer.

Once you have all the exams you want to export in the Exam List, do the following:

1. The default location of the exported files is C:\Documents and Settings\username\My Documents\My iMediaExport. In the **Export** list, click the arrow and choose **Browse** to navigate to a different destination or create a new folder. If you have an internal CD/DVD burner, you can choose the CD/DVD drive as the export location to save directly to a blank CD/DVD. A message displays if the selected directory is not empty, or if there is no media in the specified drive.
2. Select **Remove annotations** to remove any annotations from the exams.
3. Select the desired **Language** from the list for the IntelliSpace PACS program and documentation.
4. Select either the **Philips Proprietary Format** or **DICOM Format** check boxes, or select both check boxes for the exported exams.
 - **Philips Proprietary Format:** The standard, wavelet-encoded Philips format.
 - **DICOM Format:** The raw, unadulterated DICOM data from the modality. When you set this option, the DICOM information is stored in a separate directory on the portable media, called DICOM. You can copy this directory directly to other DICOM systems and archives. This is the most effective way to transport studies to other facilities that do not have IntelliSpace PACS, for consultation, education, or research. Select **Include DICOM Viewer** to make sure a DICOM Viewer is available.
 - **Both:** Selecting both check boxes provides maximum flexibility for working with and transferring the exported data, but uses more space on the portable media you select.

5. Select the **Anonymize** check box to export exams with anonymized patient information. See [“Working with Anonymized Exams in the Media Viewer” on page 345](#).
6. Review the **Summary** area to see the **Required Disk Space** and **Available Disk Space**. The initial values reflect the size of the CD/DVD version of the IntelliSpace PACS control.
7. To remove an exam from the Exam List, right click the exam and click **Delete**. Click **Yes** to remove the selected exam.
8. To password-protect the CD/DVD to protect patient confidentiality, select the **Enable Password** check box enter and confirm the desired password. You can only password-protect Philips Proprietary Format; the DICOM data is not password-protected.
9. If the GID (Geographical Identification) feature is enabled on the IntelliSpace PACS server, and the export configuration you have selected has GID enabled, the **Export GID** check box is available. Select this check box if you want GID information to be included in the Media Viewer export. See [“Setting iExport Preferences” on page 491](#).

NOTE

The GID (Geographical Identification) feature is available for specific region(s).

10. Click **Start** to begin exporting the exams. If you are writing to a CD/DVD, Windows begins the CD/DVD creation process. The status bar at the bottom of the screen provides updated information on the progress of the export. In addition, each exam being written to the media displays a symbol that indicates the progress of that individual exam. The following symbols are used.
 - Light green dot: Ready to be written
 - Light green arrow: In Progress
 - Blue check: Completed
 - Red X: Failed
 - Dark green dot: Inactive
11. Based on the selection made in step 4 above, after the exams are exported, the specified export folder will contain the **MediaViewerLauncher.exe** and **PmsDView.exe**.
 - Run the **MediaViewerLauncher.exe** file to open the **IntelliSpace PACS Media Viewer**.
 - Run the **PmsDView.exe** file to open the **Philips DICOM Viewer**.

NOTE

When the burned CD is inserted into a CD/DVD drive, Media Viewer or Philips DICOM Viewer will not be launched automatically. Locate and double click on **MediaViewerLauncher.exe** and **PmsDView.exe** to launch the IntelliSpace PACS Media Viewer and Philips DICOM Viewer.

NOTE

If you password-protect the CD/DVD and subsequently the password is lost, there is no way to recover the lost password.

Working with Anonymized Exams in the Media Viewer

1. Do one of the following:
 - In the Folder List, copy exams from a Personal or Public Folder that contains anonymized exams to the Local Export folder. See [“Making Patient Information Anonymous” on page 74](#).
 - Copy non-anonymized exams to the Local Export folder and make them anonymized from within the Media Viewer.
2. Select **DICOM Format** or both check boxes (Philips and DICOM), and then select **Anonymize** for the exported exams.

Working with VIP Patient Exams in the Media Viewer

Certain patients, such as politicians, entertainers, and hospital employees, may be designated as VIPs (Very Important Persons) in IntelliSpace PACS. Accessing these patient records and performing all actions (such as opening exams, viewing images, exporting exams from the Media Viewer, and so on) are audited.

If you move several exams to the Media Viewer folder and some of the exams are for sensitive patients, the names and MRNs of the sensitive patients are listed before the exams are exported to the Media Viewer folder. You can choose to either export all these exams or cancel the export operation.

Using the CD/DVD

1. Insert the portable media device. The disk plays automatically when you insert it; no internet connection is needed.
2. If the portable media device has been password-protected, a login screen is displayed.
3. Enter the password associated with the portable media device.
4. Click **Log In**. A list of the exams on the portable media device displays.
Click the help icon to display the IntelliSpace PACS Media Viewer help.

Printing to Paper

NOTE

If the image is larger than the paper size (for example, in true-size), parts of the image will be automatically cropped out on the print-out.



WARNING

Images printed to paper from IntelliSpace PACS are not intended for diagnosis, and should be used only for communication purposes.

For diagnostic printing, see [“Printing to DICOM” on page 347](#).

You can print an entire exam or selected windows to your default printer. To print only one or more image(s) in a series (for example, two slices of an MR exam), make those slices key images and then print only key images.

1. Right-click on an image and from the menu, select **Print** and then **To Paper**. The **Print to Paper** dialog box displays.
2. From the **Name** list, select the desired printer.
3. From the **Print Configuration** list, select the desired configuration (for example, 3x4 stack).
4. From the **Optimize For** list, select **Best Image Quality** or **Faster Image Printing**.
5. Enter the **Number of copies**.
6. Enter an **Image Skip** pattern, if desired (for example, to skip every other image, enter 2).
7. In the **Print Range** area, select whether you want to print the **Entire Exam** or **Selected Window(s)**.
8. In the **Print Options** area, check the options you want. For example, select the **Print single images on separate sheets** check box if you want to print different plain film series on separate sheets, regardless of how much space is available.
9. If you are printing CT, MR, or other stack series, check **Print Reference Frame** to include the reference frame. When this option is checked, the **Reference Frame Options** area becomes active. Select the desired **Series** and **Image**.
10. Select **Mark as Confidential** to print header and footer. This option will be enabled only if the **Confidential Data Header** and **Confidential Data Footer** is configured in the **Paper Printing** preference under **System Preferences**. See [“Setting Paper Printing Preferences” on page 489](#) for more details.

NOTE

Select the appropriate Paper size when printing, based on the “Format” selected above to properly display the header and footer.

11. In the **Trim Images** area, select how or if you want to trim images. You can trim from the front, back, or both.
12. After you have selected the desired options, the bottom of the **Print to Paper** dialog box shows the number of pages necessary to print the selected configuration.
13. Click **OK**.

Printing to DICOM

You can print to film an entire exam or selected windows to your default laser printer. To print only one or more image(s) in a series (for example, two slices of an MR exam), make those slices key images and then print only key images.

1. Right-click on an image and from the menu, select **Print** and then **To DICOM**. The **Print Film** dialog box opens.
2. From the **Name** list, select the desired printer.
3. From the **Configuration** list, select the desired configuration.
4. Enter the number of copies you want to print and any image skip pattern you want (for example, to skip every other image, enter 2).
5. Select the desired **Print Justification**, if applicable.
6. In the Print Range area, select whether you want to print the **Entire Exam** or **Selected Window(s)**.
7. Select the **Print Options**, as follows:
 - Select the **Print single images on separate films** check box if you want to print different plain film series on separate sheets, regardless of how much space is available.
 - Select the **Print Measurements and Annotations** check box if you want these elements to be included when the image is printed.
 - Select the **Print key images only** check box to print only the key images.
 - Select the **Print Reference Frame** check box if you want this element to be included when the image is printed. When this is selected, the Reference Frame Options fields are enabled.
8. If you selected the **Print Reference Frame** check box, select the **Series** and **Image** you want printed.
9. Select a **Trim Images** option of **None**, **From Front**, **From Back**, or **Both**.
10. Do the following in the **Client Certificate** region:

NOTE

The **Select** button will be enabled only for the selected printer only if the option “Use Client Certificate” option is selected in the “System Preference”. See section “[Defining a DICOM Printer](#)” on page 496 for more details.

- Click on the **Select** button to select a certificate.

NOTE

Ensure that the “Personal” folder under “Certificates” in the local system contains the certificates.

- The **Select a Certificate** window opens listing the available certificates.
- Select a certificate and click **OK**.

NOTE

At the time of printing, the user can select or deselect this header and footer using the “Mark as Confidential” option.

1. After you have selected the desired options, the bottom of the **Print Film** dialog box shows the number of pages necessary to print the selected configuration.
2. Click **OK**.

iExport for DICOM Export

The iExport tool allows users with administrative privileges to monitor the export of DICOM exams and the export queue. Your IntelliSpace PACS System Administrator first needs to configure the destination DICOM device(s).

IntelliSpace PACS allows for multiple instances of the iExport Service to support larger distributed configurations and to distribute the processing of requests to export patient studies to external DICOM devices.

iExport works with the **DICOM** functions which allow users to export IntelliSpace PACS exams as DICOM to another DICOM device, such as a DICOM printer, a 3D imaging tool, or a DICOM archive.

NOTE

All raw DICOM and imaging is exported. However, native iSyntax presentation states not in GSPS are not exported.

Certain patients, such as politicians, entertainers, and hospital employees, may be designated as VIPs (Very Important Persons) in IntelliSpace PACS. Accessing these patient records and performing all actions (such as opening exams, viewing images, exporting exams, and so on) are audited.

If you use iExport for several exams and some of the exams are for sensitive patients, the names and MRNs of the sensitive patients are listed before the exams are exported. You can choose to either export all these exams or cancel the export operation.

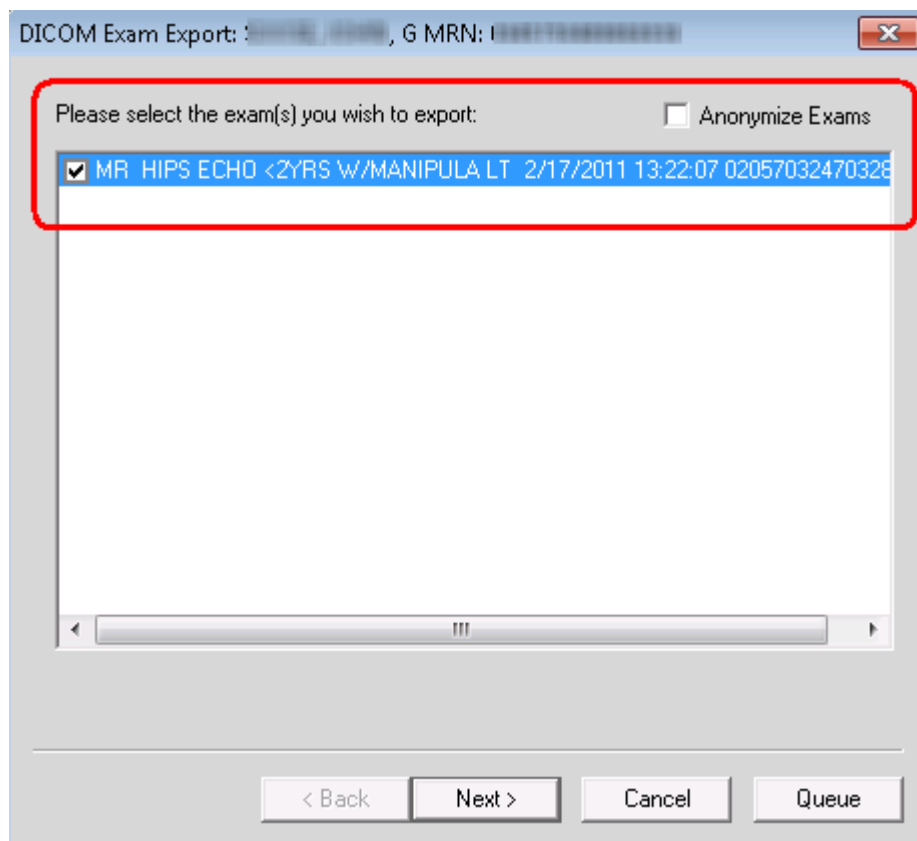
Federated Cached exams can be exported using Export via DICOM.

On any page of the iExport Wizard, you can click **Queue** to open the iExport Queue dialog to see how busy the queue is. See [“Viewing the iExport Queue” on page 356](#).

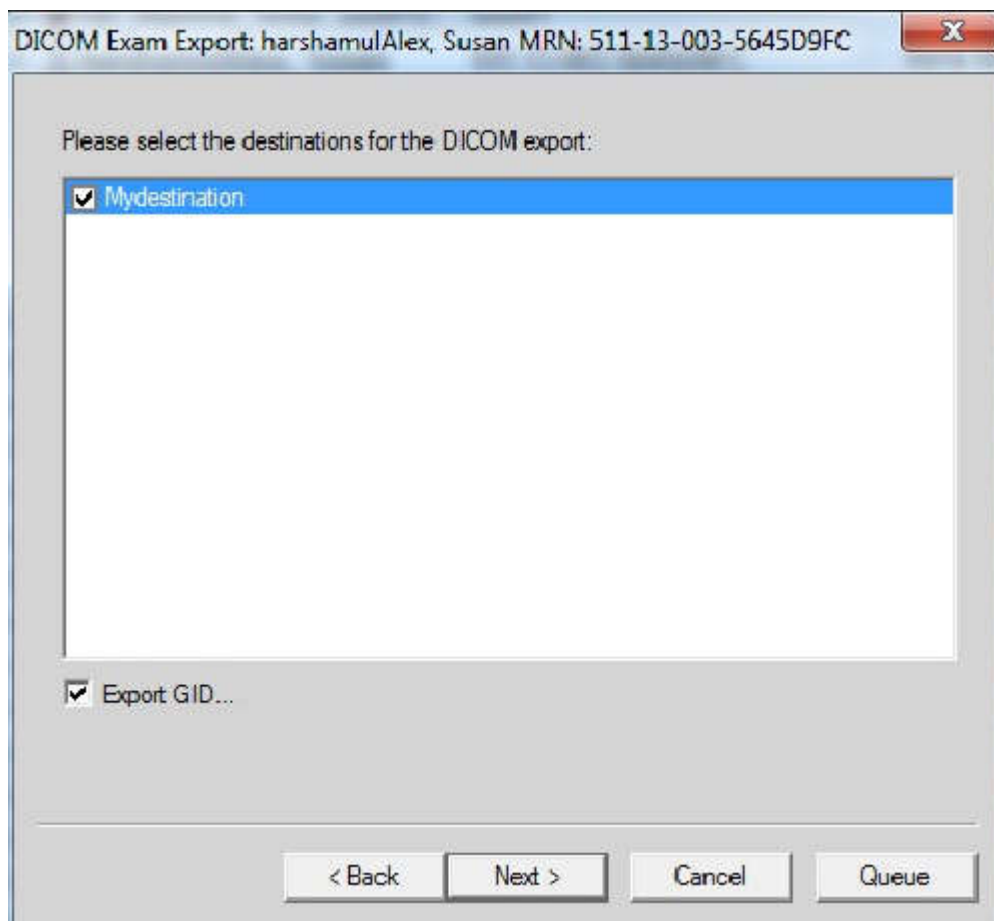
NOTE

You can use iExport for exams with anonymous patient information. See [“Exporting Anonymous Exams” on page 353](#).

1. Right-click an exam listing from any worklist, the Patient History, the Relevant Exams, or the exam rack, and from the menu, select **Export via DICOM**.



2. Select the exam(s) that you wish to export. To make exported patient information anonymous, select the **Anonymize Exams** check box. See [“Exporting Anonymous Exams” on page 353](#).
3. Federated Cached Exams are displayed in blue font.

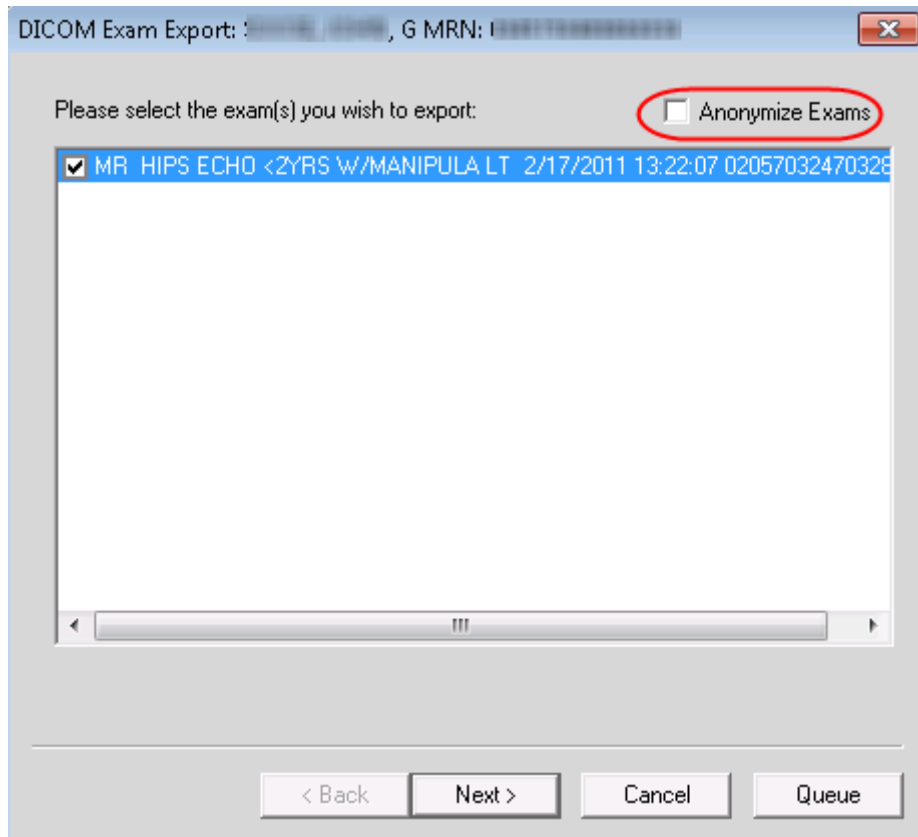
**NOTE**

The GID (Geographical Identification) feature is available for specific region(s).

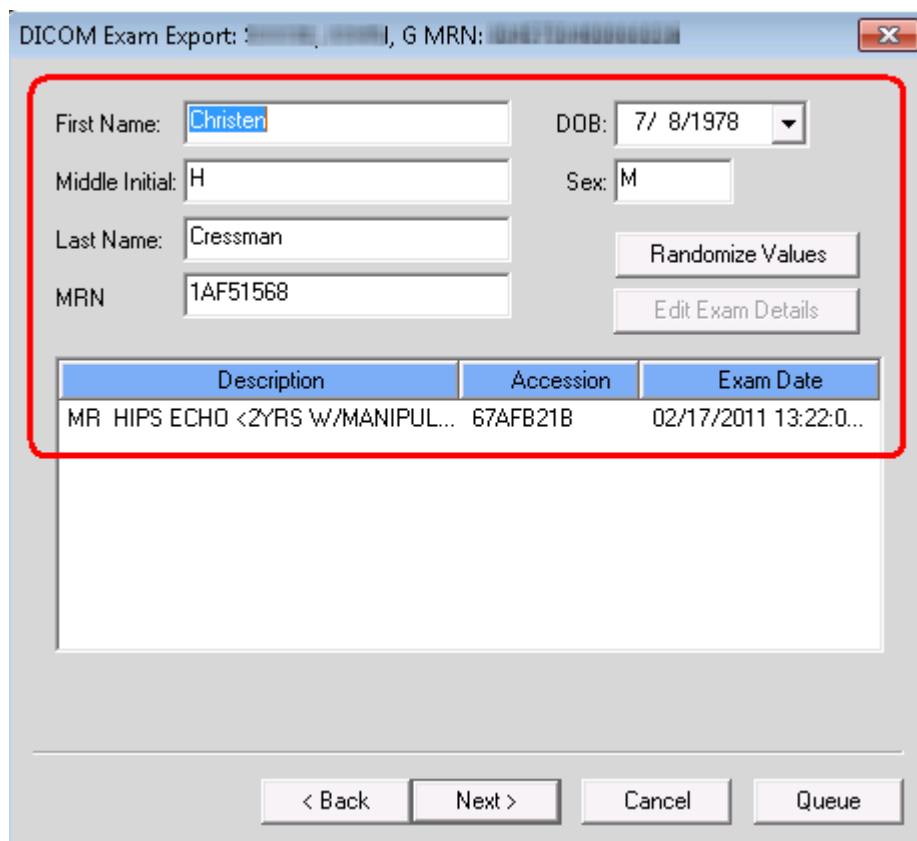
7. Review the exam and destination information and click **Back** to correct.
8. In the Notifications section, enter the following additional information if desired:
 - Enter an email address for notification of when the export is complete. Separate email addresses by commas.
 - Select the appropriate **Priority: Normal, Urgent, or STAT**.
 - Add a **Description** of the exam.
 - Click **Queue** to see how busy the queue is.
9. Click **Finish** to begin the export.

Exporting Anonymous Exams

1. Right-click an exam listing from any worklist, the Patient History, the Relevant Exams, or the exam rack, and from the menu select **Export via DICOM**.



2. Select the exam(s) that you wish to export. To make exported patient information anonymous, select the **Anonymize Exams** check box.
3. Click **Next**.
4. Review the anonymous exam information, including the **First Name**, **Middle Name**, **Last Name**, **MRN**, **DOB**, and **Sex**.



DICOM Exam Export: [Study Name], G MRN: [MRN]

First Name: DOB:

Middle Initial: Sex:

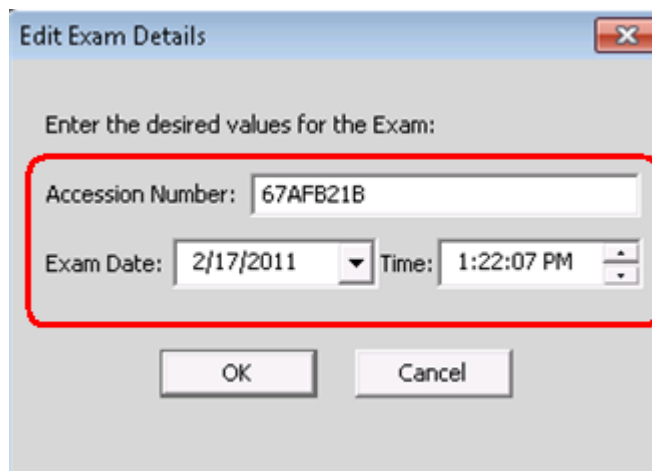
Last Name:

MRN:

Description	Accession	Exam Date
MR HIPS ECHO <ZYRS W/MANIPUL...	67AFB21B	02/17/2011 13:22:0...

< Back Next > Cancel Queue

- If desired, click **Randomize Values** to change the anonymous patient information.
- To change the **Description**, **Accession Number** or **Exam Date**, select the exam and then click **Edit Exam Details**, or double-click the exam in the list. The **Edit Exam Details** dialog box opens, allowing you to enter the desired information.



Edit Exam Details

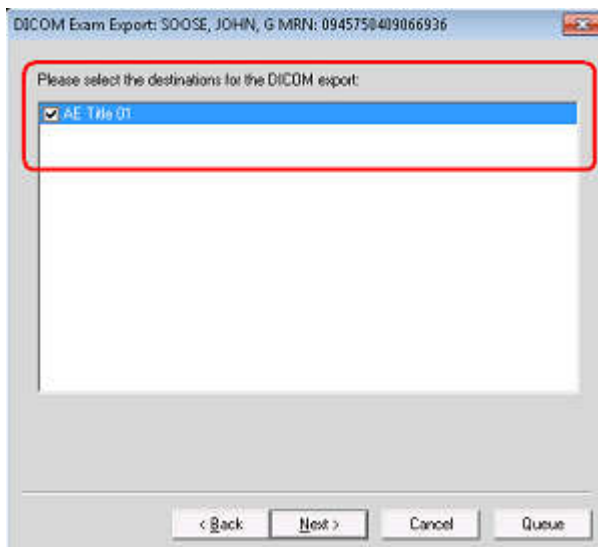
Enter the desired values for the Exam:

Accession Number:

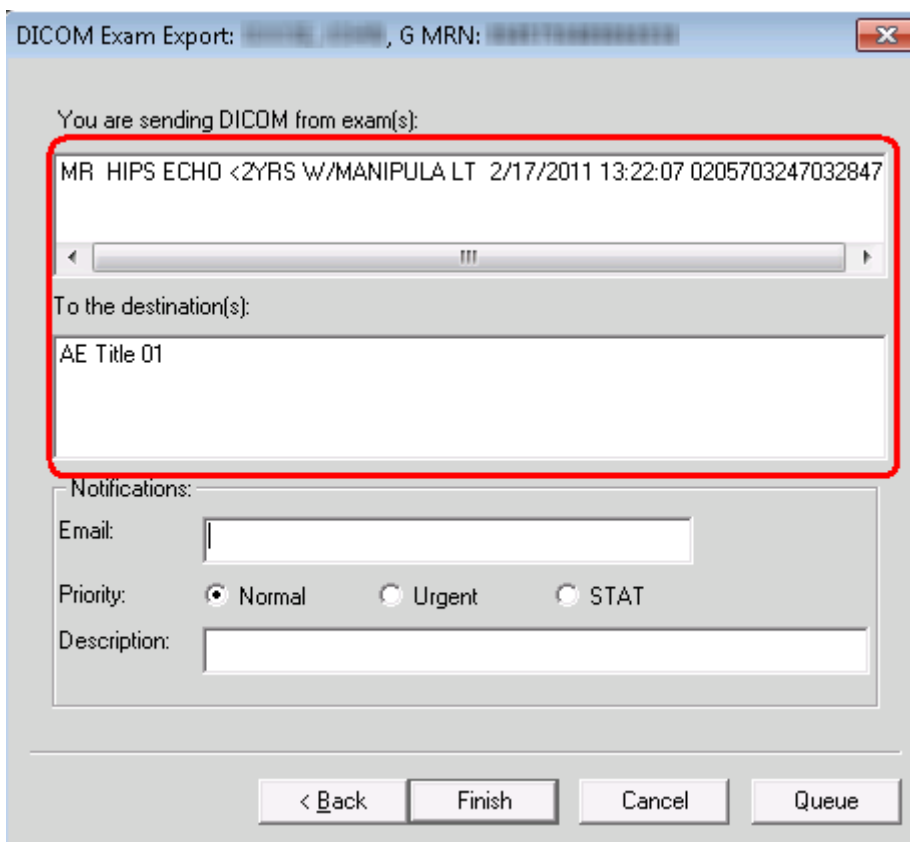
Exam Date: Time:

- Click **OK**.
- Click **Next**.

- Select the DICOM devices to which you wish to export the exam. The DICOM devices listed are compiled from an IntelliSpace PACS dictionary set up by your IntelliSpace PACS System Administrator.



- Click **Next**. A summary of the export of the series and images is displayed.



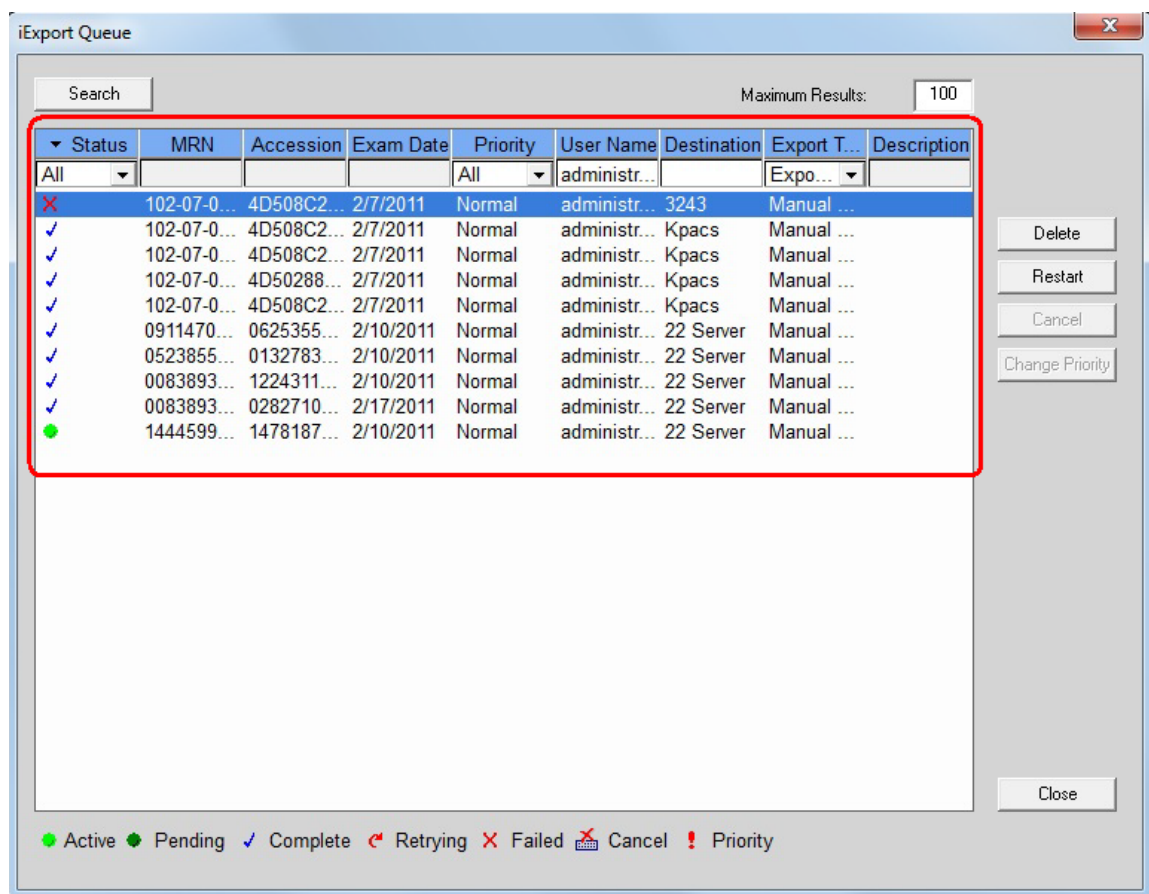
- Review the exam and destination information and enter the following additional information in the Notifications section if desired:

- Enter an email address for notification of when the export is complete. Separate email addresses by commas.
- Select the appropriate **Priority: Normal, Urgent, or STAT.**
- Add a **Description** of the exam.
- Click **Queue** to see how busy the queue is.

12. Click **Finish** to begin the export.

Viewing the iExport Queue

If you have the proper permissions, you can view the iExport Queue at any time to view the status of all exams being exported in the system.



Note the following:

- Columns are sortable.
- Action buttons – **Delete, Restart, Cancel, Change Priority** – are displayed in the right side of the screen.
- Status icons with a brief description are displayed at the bottom of the screen.

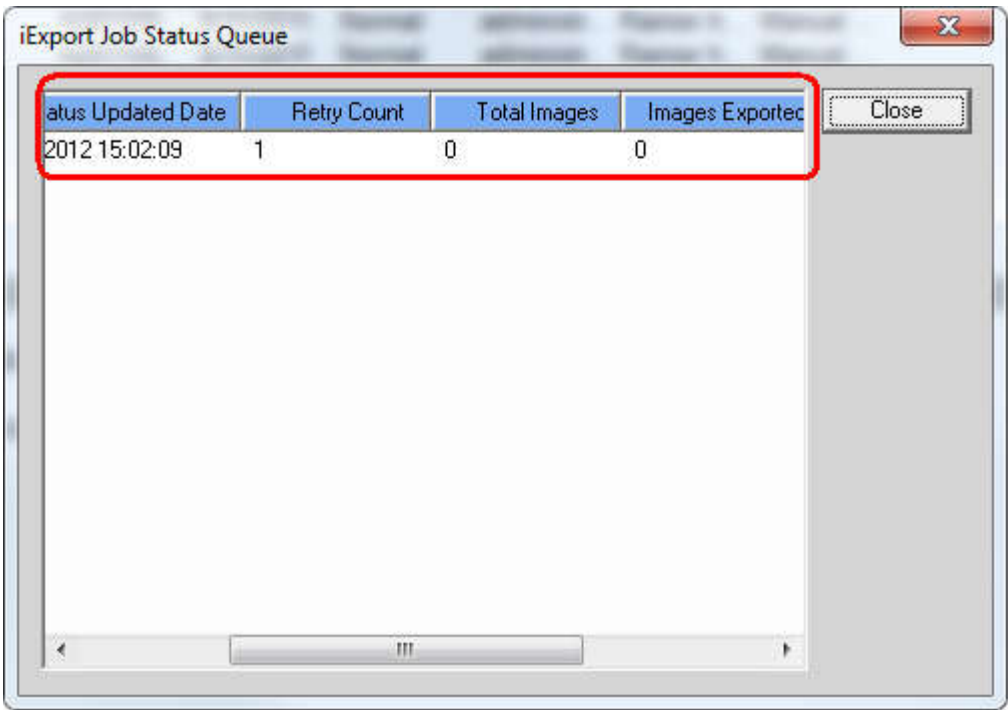
System Administrators can add, edit, and remove existing DICOM destinations for the iExport tool in the System preferences. See [“Setting iExport Preferences” on page 491.](#)

1. Do one of the following:
 - Click **Queue** from the **DICOM Export** dialog box.
 - Click **Queue** from the **Send/Export via DICOM** dialog box.
 - Click the **Q** icon in the IntelliSpace PACS Control Strip.
2. The DICOM queue is displayed in the **iExport Queue** dialog box. Results are filtered by the **Status** and **Export Type** criteria. The status icons display the current status of the exam's export. You can do the following:
 - Sort the resulting queued exams by clicking the desired column header.
 - Search for iExport requests by clicking **Search**. The following search parameters are supported: **User Name**, **Priority**, **Status**, **Destination**, and **Export Type**.
 - Refresh the list by clicking **Search**.
 - Remove an exam from the list by highlighting it and clicking **Delete**. A confirmation message displays. (You cannot delete export requests with Retrying or Active status.)
 - Restart an exam export that has failed by clicking **Restart**. (You can restart only export requests with Failed status.)
 - Cancel the request by clicking **Cancel**. (You can cancel only export requests with Pending or Retrying status.)
 - Change the priority of a submitted request by clicking **Change Priority**. (You can change the priority only for export requests with Pending status. After a request has been picked up by an Export Service, changes to priority may not affect the execution of the request.)
 - Note that the **Delete**, **Restart**, **Cancel**, and **Change Priority** buttons are all disabled while an export request has Active status.
3. Click **Close**.

Viewing iExport Progress Information

You can double-click an iExport job in the **iExport Queue** dialog box to view its progress in the **iExport Job Status Queue** window. The **iExport Job Status Queue** window displays the following progress information: **Creation Date**, **Status Updated Date**, **Retry Count**, **Total Images**, **Images Exported**, and **Error Message**.

1. Double-click an iExport job. The **iExport Job Status Queue** window opens.



- 2. Review the information and click **Close**.

To view the latest progress of an iExport job, click **Search** in the **iExport Queue** dialog box to refresh the list, then double-click the job for which you want to view progress.

Canceling Active iExport Jobs

Long running iExport jobs which are in active state can be canceled from the iExport Queue. These jobs are not guaranteed to cancel completely but will stop after the periodic cycle finds a “Cancel” request for the job.

What is actually canceled depends on what was in the process of being sent when the cancel request occurred.

iQuery for DICOM Study Retrieval

The iQuery tool allows an authorized user to retrieve DICOM studies from your institution's digital archive and send them to IntelliSpace PACS. If you have the iQueryExecute permission, you can query the archive, submit studies to be moved, and view the queue. In addition, with the proper permissions, you can perform different tasks related to viewing and managing the queues, as well as managing queries and retrievals from the Exam Timeline and from within the iQuery window. These tasks are available in the PACS Administration page.

If you have authorization and your institution has one or more digital archives, iQuery is available from the Folder List. See [“Folder List” on page 70](#).

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Philips

You can select one remote archive to query or you can select all archives to query. When more than one archive is available, the default archive selection is **All**. Each archive has a specified Query Model, which determines how iQuery filters the tags:

- Patient Root QR
- Patient/Study Only QR
- Study Root QR
- Unsupported FIND Order – If the configured supported model for the remote archive is not known, then the order of negotiation by iQuery is as follows:
 - StudyRoot
 - PatientRoot
 - PatientStudyOnly Root

The following are the four query levels:

- Patient level – query tags are patient name and MRN
- Study level – query tags are study date, study time, Accession Number, Study ID, Study Instance UID, Modalities used in Study, referring physician name, study description, patient birthdate, patient sex, number of study related series, number of study related instances
All study level queries can be done only for a given patient.
- Series level – query tags are modality, Series Number, Series Instance UID, requested procedure ID, scheduled procedure Step ID, performed procedure step start date, performed procedure step start time, number of series-related instances, series description
All series level queries can be done only for a given patient and Study UID.
- Image level – query tags are Instance number, SOP Instance UID, SOP Class UID

iQuery filters the query tags based on whether the Patient Name and MRN are specified as wild cards. When the Patient Name and MRN are not specified as wild cards, iQuery filters the query tags based on the selection of the Archives chosen as follows:

- If the “All” archives option is selected, only the Patient Name and MRN tags are considered for querying. All other tags are ignored.
- If a single archive is selected whose Query Model is set to either “Unknown” or “Patient-Study Only”, only the Patient and Study level tags are considered for querying. All other tags are ignored.
- If a single archive is selected whose Query Model is set to either “Patient Root” or “Study Root”, tags at all levels are considered for querying.

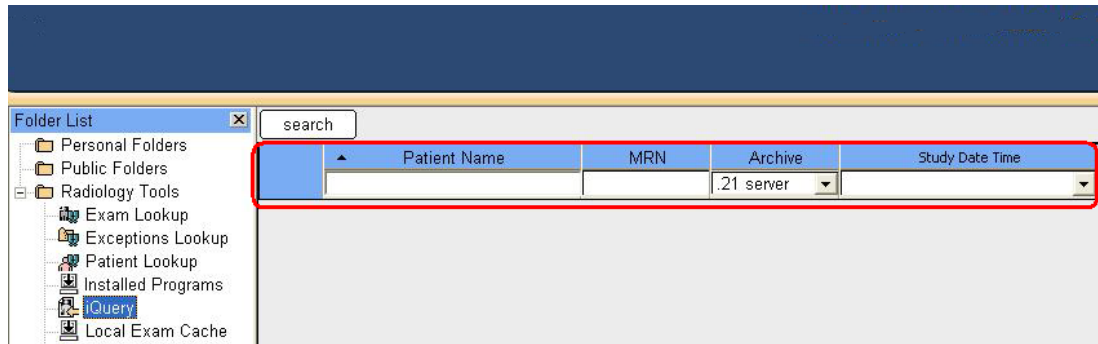
When the Patient Name and MRN are specified as wild cards, iQuery filters the query tags based on the selection of the Archives chosen for querying as follows:

- If the “All” archives option is selected, only the Patient Name and MRN tags are considered for querying. All other tags are ignored.
- If a single archive is selected whose Query Model is set to either “Unknown”, “Patient-Study Only”, or “Patient Root”, only the Patient level tags are considered for querying. All other tags are ignored.

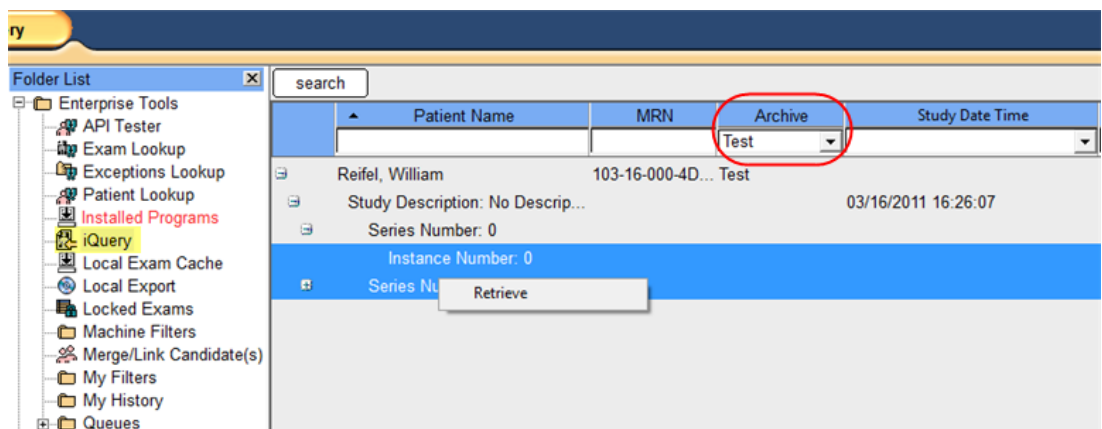
- If a single archive is selected whose Query Model is set to “Study Root”, only the Patient and Study tags are considered for querying. All other tags are ignored.

To perform a query using iQuery

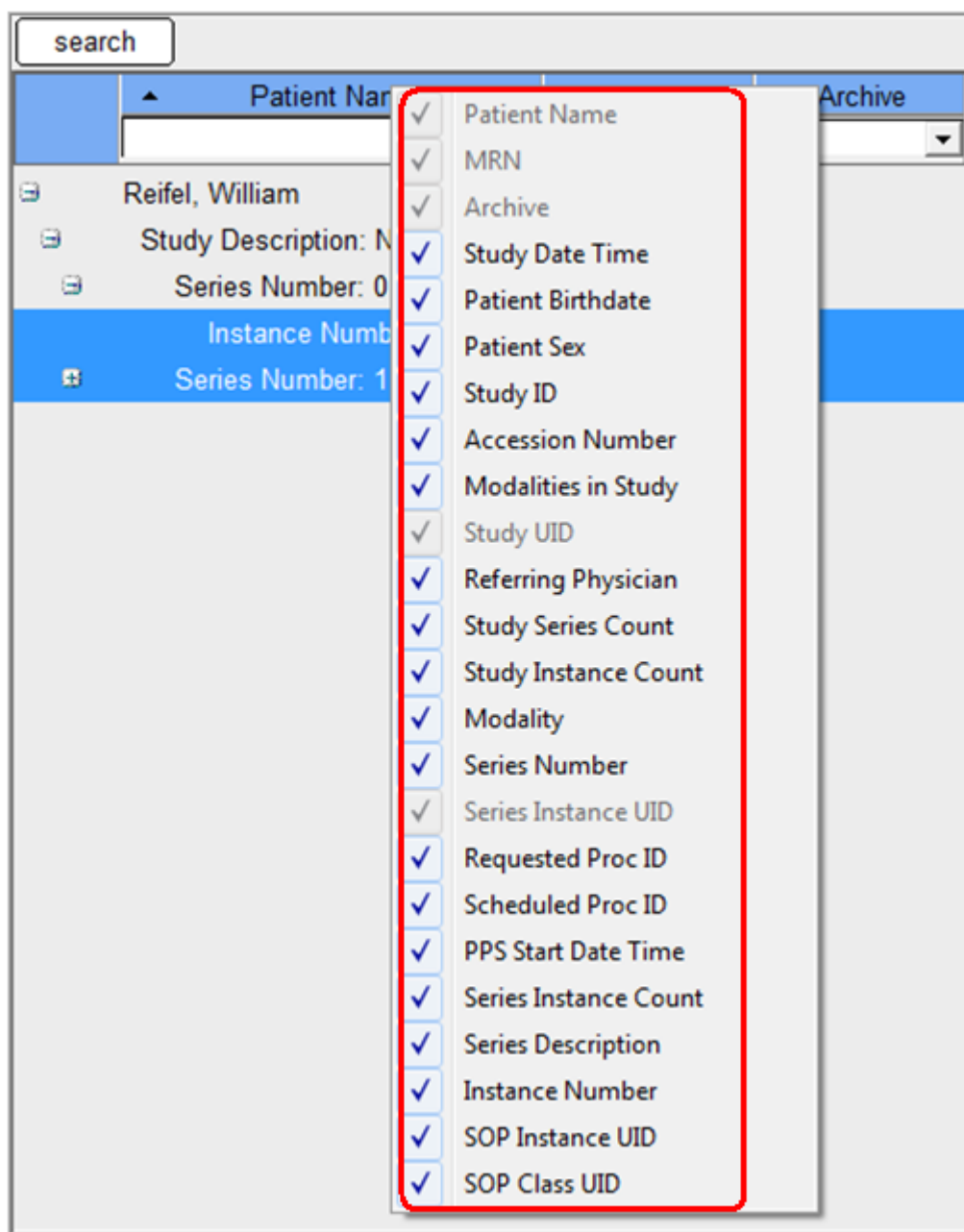
1. Click **iQuery** in the Folder List. The **iQuery** main page displays, and contains the search fields you use to enter the patient data that you wish to retrieve.



2. Enter the query criteria into the appropriate search fields and click **Search**. iQuery searches all available archives.
3. To restrict your search to a particular archive (such as VNA), select it from the **Archive** list by clicking the dropdown arrow in the **Archive** field, and then clicking **Search**.
4. During the search, the **Search** button changes to a **Stop** button, which is enabled. To stop the query, click **Stop**.
 - The patients that match your query are displayed below the query fields. If no studies match your query, you will be notified by a message in the IntelliSpace PACS Control Strip.
 - The maximum results that can be displayed at any time are 50. If more than 50 studies match your search criteria, only 50 are displayed and the Control Strip displays a message that you must narrow your search.
 - For a Patient Root Model Query, the maximum number of patients displayed is 50.
 - For a Study Root Query Model, the maximum number of studies displayed for a single patient is 50, if all of those studies belong to one patient. If any of the studies are expanded and you run another query, the results of that subsequent query are also limited to 50.
5. View the studies available for a patient by clicking the plus symbol to the left of the patient name.



6. Expand the list under the Patient Name by clicking the + sign in front of **Study Description** and then **Series Number**. If there are several series in a study or several instances in a series, the series and instances are numbered based on the Series Number and Instance Number DICOM tags respectively.
7. To configure the query retrieval columns display, right-click a **Series Number** or **Instance Number** (including any DICOM state, such as a Presentation State) to select/deselect the columns you want to display. By default, all query retrieval columns are selected. Note that Patient Name, MRN, Archive, Study UID, and Series Instance UID are automatically selected and grayed out, so they cannot be deselected.



8. Right click any displayed row and click **Retrieve**.

**WARNING**

- Data that has been retrieved from a VNA archive may be changed in the VNA by a third party user while a copy of the data is stored in the IntelliSpace PACS Cache. To make sure that you have the latest patient and study information, delete the study in the Cache using the Server Utility Tool, and then use iQuery to search the VNA archive for the latest data. Note that when the Cache reaches capacity, studies are automatically deleted. Therefore, verify that the study is present in the Cache, because if the Cache is full, the study may be deleted automatically.
- During DICOM Query of a VNA from the Timeline, a message displays on the Canvas Page if retrieving data from a VNA archive takes too long or if the DICOM file is extremely large. The Canvas Page displays the images after they have been retrieved. The user can click **Retry** to load the images.

Submitting and Confirming the Retrieval List

The number of studies you have selected and the archives in which they are stored are displayed in the top dialog box of the **iQuery Confirmation** dialog.

1. Click **Retrieve**. A confirmation page displays.

iQuery Confirmation

Archive: Test MRN: 103-16-000-4D81470F Images requested: 1
 Archive: Test MRN: 103-16-000-4D81470F Series requested: 1

Priority

☐ Stat ☒ Standard ☐ Scheduled

Deadline

February, 2011 March, 2011

30	31	1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	13	14	15	16	17	18	19
20	21	22	23	24	25	26	20	21	22	23	24	25	26
27	28						27	28	29	30	31	1	2
							3	4	5	6	7	8	9

Time

4:00:00 PM

Notification

☒ Notify by email in case of error ☐ Print submitted query

@philips.com

OK Cancel

2. Select a priority for the request you are submitting in the **Priority** field.
 - **Stat**: Requests that the archive send the studies immediately and with high priority.
 - **Standard**: Has the studies available as soon as possible and with normal priority. This is the default setting.

- **Scheduled:** Displays the **Deadline** dialog box and allows you to set the date and time that you need the studies by.
3. If you want to be notified if an error occurs while your request is being processed, select the **Notify by email in case of error** check box and enter the email address(es) to which you want notification sent.
 4. To print a copy of the request list for your records, select the **Print submitted query** check box. When the request is complete, a copy of the request is printed to your default printer.
 5. Click **OK** when you have finished. You return to the main iQuery screen.

Viewing the iQuery Queue

The iQuery Queue provides a number of ways to alter the retrieval process. Note that these functions are only available to users with administrative privileges.

1. To view the studies awaiting retrieval, in the Folder List, click **Queues** and then click **iQuery**. The studies display in the right pane of IntelliSpace PACS.

Status	Patient Name	MRN	Submission Date	Priority	% Complete
Completed	Reifel, William	103-16-000-4D81470F	2011-03-17 12:16	Stat	100

2. The **Status** of each retrieved study retrieval is listed in the first column, and the **% Complete** of each study retrieval is displayed as well.
3. Do one of the following:
 - To remove a study from the queue, highlight that study and click **Delete**. A confirmation message displays. Note that only completed and failed jobs can be deleted.
 - Only Submitted jobs can be canceled. In addition, you can change the priority of a Submitted job.
 - You cannot retry the studies which iQuery failed to retrieve; however, the Retrieve operation is programmed for automatic retry.
 - To search for retrieve jobs that meet the criteria specified in the query fields, click **Search**.
 - To show all retrieve jobs that have been in the queue, select **All** in the Status field, and then click **Search**.

18 Using Hanging Protocols

This chapter discusses the creation and use of hanging protocols and series matching rules.

- **Overview of Hanging Protocols:** see [“Overview of Hanging Protocols” on page 365](#)
- **Configuring Hanging Protocols:** see [“Configuring Hanging Protocols” on page 368](#)
- **Mammo-specific Hanging Protocols:** see [“Mammo-specific Hanging Protocols and Series Matching Rules” on page 384](#)
- **Selecting Hanging Protocols:** see [“Selecting Hanging Protocols” on page 395](#)
- **Editing Hanging Protocols:** see [“Editing a Hanging Protocol” on page 395](#)
- **Viewing HPs for other modalities:** see [“Viewing the Hanging Protocols for Other Modalities” on page 396](#)
- **HPs and Presentation States:** see [“Hanging Protocols and Presentation States” on page 396](#)
- **Series Matching Rules:** see [“Series Matching Rules” on page 401](#)
- **Adding a Series Matching Rule:** see [“Adding a Series Matching Rule” on page 402](#)
- **Adding a Series Matching Rule Groups:** see [“Adding a Series Matching Rule Groups” on page 404](#)
- **Configuring HP Sequences:** see [“Configuring Hanging Protocol Sequences” on page 406](#)

Overview of Hanging Protocols

You can create and use hanging protocols in IntelliSpace PACS Radiology to control how exams are hung in your diagnostic monitors. Hanging protocols are an important part of an efficient reading workflow.

In addition to changing monitor configurations with the mouse, you can configure IntelliSpace PACS Radiology to recognize certain combinations of exam characteristics and hang the exam according to your specifications. You can also configure hanging protocols for virtual-split monitors as if they were distinct physical diagnostic monitors.

IntelliSpace PACS Radiology offers User and System hanging protocols. User hanging protocols are created by an individual user and are available only to that user. System hanging protocols are created by the IntelliSpace PACS System Administrator and are available to all users.

Multiple hanging protocols can be created for the same exam identifier of which there are four:

- Modality
- Modality and Body Part
- Hanging Protocol Group
- Mammography (only if the **Advanced Mammography Feature** option is enabled.)

This can be beneficial when you read a lot of the same exam types that contain a lot of different series. For example, a Neuroradiologist who primarily reads MR Brain exams might want to define a few alternate hanging protocols to switch to, rather than having to re-hang the entire

study. Or, a Radiologist might want to define a few alternate hanging protocols at the Modality level that can be quickly selected and applied if there are no matching hanging protocols available for that exam, or if the System hanging protocol applied is not what s/he wants.

Hanging protocols come in two types: default and alternate. There can only be one default hanging protocol per exam identifier, such as Modality or Modality and Body Part. You can, however, create up to 50 alternate User hanging protocols and 50 alternate System hanging protocols per exam identifier. For example, you might create one default and three alternate hanging protocols for MR Brain exams. Hanging protocols that are defined as “Alternate” are never automatically applied by the IntelliSpace PACS system when the exam is opened in the Canvas Page. However, they can be selected.

Note the following:

- You create hanging protocols on the IntelliSpace PACS Radiology Canvas Page using a wizard. See [“Configuring Hanging Protocols” on page 368](#).
- After a User or System hanging protocol has been created, you can view or delete it in the User or System preferences. See [“Setting User Hanging Protocol Preferences” on page 462](#) and [“Setting System Hanging Protocol Preferences” on page 510](#).
- After User or System hanging protocols have been created, you can create a sequence in which they are displayed. See [“Configuring Hanging Protocol Sequences” on page 406](#).
- After a User or System hanging protocol sequence has been created, you can view or delete it in the User or System Preferences. See [“Setting User Hanging Protocol Sequences” on page 463](#) and [“Setting System Hanging Protocol Sequences” on page 512](#).

Hanging Protocol Hierarchy

User and System hanging protocols can be created at four different levels and are identified hierarchically (top to bottom):

- Hanging Protocol Group (Exam Code Level, Very Specific)
- Mammo (mammography-specific, if the **Advanced** Mammography Feature option is enabled)
- Modality and Body Part (Specific Level)
- Modality (Generic Level)

If both User default hanging protocols and System default hanging protocols are defined for the same hanging protocol identifier, the main exam is automatically loaded in the following order and hierarchy:

1. Mark Read Presentation State (if multiple, it is displayed in descending order with most recent first by creation date/time)
2. System Conference Presentation State (if multiple, it is displayed in descending order with most recent first by creation date/time)
3. Pre-Read PS (Presentation States changes are incorporated with the Hanging Protocols from Step 5 and onward. If multiple, it is displayed in descending order with most recent first by creation date/time)

4. Technologist PS (Presentation States changes are incorporated in with the Hanging Protocols from Step 5 and onward. If multiple, it is displayed in descending order with most recent first by creation date/time)
5. User HP Sequence (Default if priors are available), for matching HP group code
6. User HP Sequence (Default), for matching HP group code
7. System HP Sequence (Default if priors are available), for matching HP group code
8. System HP Sequence (Default), for matching HP group code
9. User HP matching HP group code
10. System HP matching HP group code
11. User HP Sequence (Default if priors are available), matching Mammo code (only if Advanced Mammography Feature option is enabled)
12. User HP Sequence (Default), matching Mammo code (only if Advanced Mammography Feature option is enabled)
13. System HP Sequence (Default if priors are available), matching Mammo code (only if Advanced Mammography Feature option is enabled)
14. System HP Sequence (Default), matching Mammo code (only if Advanced Mammography Feature option is enabled)
15. User HP matching Mammo code (only if Advanced Mammography Feature option is enabled)
16. System HP matching Mammo code (only if Advanced Mammography Feature option is enabled)
17. User HP Sequence (Default if priors are available), matching Modality Type & Body Part
18. User HP Sequence (Default), matching Modality Type & Body Part
19. System HP Sequence (Default if priors are available), matching Modality Type & Body Part
20. System HP Sequence (Default), matching Modality Type & Body Part
21. User HP matching Modality Type & Body Part
22. System HP matching Modality Type & Body Part
23. User HP Sequence (Default if priors are available), matching Modality Type
24. User HP Sequence (Default), matching Modality Type
25. System HP Sequence (Default if priors are available), matching Modality Type
26. System HP Sequence (Default), matching Modality Type
27. User HP matching Modality Type
28. System HP matching Modality Type

The following are not displayed as system default, but by user selection only from their respective areas:

- Folder Conference Presentation State
- User Presentation State

Configuring Hanging Protocols

You use the **Create Hanging Protocol** wizard to create and configure hanging protocols. This wizard has four pages, described in the following procedures:

- Page 1: Naming and identifying the hanging protocol. See [“Naming and Identifying the Hanging Protocol” on page 368](#)
- Page 2: Configuration options. See [“Setting Configuration Options” on page 369](#)
- Page 3: Monitor options. See [“Setting Monitor Options” on page 373](#)
- Page 4: Exam options. See [“Main Exam Settings Options” on page 377](#)

Naming and Identifying the Hanging Protocol

1. On the Canvas Page, right-click in the Exam Margin and from the menu, select **Create User HP** or **Create System HP**. The first page of the **Create Hanging Protocol** wizard displays.

Select this option to work with Series Matching Rules in subsequent pages of the wizard.

2. Enter a **Name** for the hanging protocol. IntelliSpace PACS Radiology suggests a name, based on the modality and body part, if available (for example, CT Head). If you choose a name that is already being used, a message displays saying that you need to select a new name.
3. Select an **Identifier** for the hanging protocol.

- **Modality:** Applies the hanging protocol to all exams of this modality (for example, CT).
 - **Modality and Body Part:** Applies the hanging protocol to be applied to all exams of this modality and body part (for example, MR Brain).
 - **Hanging Protocol Group:** Applies the hanging protocol to all exams associated with this Hanging Protocol Group. This option is only available if your IntelliSpace PACS System Administrator has configured a Hanging Protocol Group for this identifier type (for example, Chest).
 - **Mammo:** Applies the hanging protocol to all mammography exams. This option is only available if you have a mammography exam open in the Canvas Page and the Advanced Mammo Feature option has been enabled (turned **ON**) by Philips personnel.
4. Select a **Type** for the hanging protocol.
 - **Default:** Sets the hanging protocol as the default for all exams of this type. Note that the Default radio button is selected by default every time you open the wizard. for the first hanging protocol you create for each of the available identifiers.
 - **Alternate:** Select this option if you already have a default hanging protocol for the selected identifier. When you already have a default hanging protocol for the selected identifier and you do not select **Alternate** before clicking **Next**, the message “**A Hanging Protocol of the same type already exists. Please select another type.**” displays.
 5. Select the **Use Series Matching Rule** check box if you want to use the rules set up by the System Administrator to match specific series or images within a hanging protocol. Note that this check box is enabled only when Series Matching Rules are present. Only one rule should be created for each type of series or image. Selecting this check box also selects the **Use Current Exam Layout** check box. This means that the hanging protocol takes the current exam layout into account. The actual rules are displayed, if available, and can be selected in the next screen of the **Create User Hanging Protocol** or **Create System Hanging Protocol** window. See [“Adding a Series Matching Rule” on page 402](#).
 6. The **Use Current Exam Layout** check box is automatically selected when you are creating a Hanging Protocol if the **Use Series Matching Rules** check box is selected. This feature is only available when you are editing an existing hanging protocol, and is dependent on the definition of the Series Matching Rules contained within the hanging protocol.
 7. Click **Next**. The next page of the wizard displays, allowing you to adjust the display settings for series and images, and to create clones. See [“Setting Configuration Options” on page 369](#).

Setting Configuration Options

In the second page of the **Create Hanging Protocol** wizard, you can define various configuration options for the hanging protocol.

Page 2 of Hanging Protocol wizard (see following table for number definitions)

Create User Hanging Protocol

Matching Series:

1

CT-

2

Display Settings

3

CT- 1/2

Display Setting 1 ☒ 2 ☐

Note: If Display Setting 2 is not used, it is not saved.

4

☐ Scout Line Mode

☐ Localizer Mode

☐ Invert Image

☐ Flip Horizontal

☐ Flip Vertical

☐ Rotate90 CW

☐ Rotate90 CCW

☐ Spine Labeling

☐ Don't Auto Hang On Monitors

5

Multi Image Mode: 1X1

6

Image Processing: None

7

Zoom Presets: Fit to Window

8

Window Level

☒ Default

9

Add Rule Remove Rule

10

Add Clone Remove Clone

11

Add Group Remove Group

12

☐ Enable stacking for series that match the same rule

< Back Next > Cancel

Feature Number	Feature Description
1	Series Matching Rules are displayed if Use Series Matching Rules is checked.
2	Display Setting: Use this option to configure two display settings for the same Series Matching Rule(s). This option can be used to define different display settings across the main exam and prior exams. See “Setting Monitor Options” on page 373 for more information..
3	Display Settings Indicator: The Display Settings Indicator displays the Matching series and the corresponding display settings..
4	Select desired display options.
5	Select Multi Image Mode for stacked windows.
6	Select the desired image processing and zoom factor.
7	Select a Zoom Preset to view the images.
8	This is for preset WW/WL for exam modality, such as Lung or Bone. WW/WLs for CT exam.
9	Click to select a previously defined Series Matching Rule
10	Click to make a copy of the Series Matching Rule
11	Click to select a previously defined Series Matching Rule Group
12	Select this option to stack all the series that matches the same rule

1. If you have selected the **Use Matching Series Rules** check box in the first page of the **Create Hanging Protocol** wizard, the available rules and groups are displayed in the **Matching Series** list .

You can add or remove previously defined rules and clones. See [“Adding a Series Matching Rule” on page 402](#). The advantages of using Series Matching Rules as a part of hanging protocols are:

- Automatic sorting of series.
- Automatic application of features to specific series (such as Multi-Image mode, Window Width and Level presets, Scout mode, Localizer tool, Invert Image, and Clones).

You can add or remove previously defined groups. See [“Adding a Series Matching Rule Groups” on page 404](#).

The advantage of using the Series Matching Rules Groups as part of Hanging Protocols is to define the ordering of series in the series stacking mode.

NOTE

To use the Series Matching Rules Group, series matching rules should be defined.

1. Select an option from the **Other Series** list.
 - To configure the **Display Settings** that will be applied to all Stacked Image Windows, click **Stack Window(s)**, then select the desired settings.
 - To configure the **Display Settings** that will be applied to all Single Image Windows, click **Single Image Window(s)**, then select the desired settings.
 - To configure the **Display Settings** for clones, select each clone and make your selections. A clone is a copy of an image or series that can be used to provide alternative views. For example, you might want to clone all single image windows and apply the **Invert Image** option to the clone, or clone all stacked image windows with Lung and Bone Window Width and Level preset. Up to six clones can be created for **Stack Window(s)** and **Single Window(s)**. Click **Add Clone** to add a clone, or **Remove Clone** to delete a clone.
2. From the **Multi Image Mode** list, choose how you want to display stack images in Multi-Image modes in the diagnostic monitor. This option is only available if the images are in a stacked window format.
3. Select the **Default Window/Level** check box if you want to apply the user and system default Window Width and Level to the selected stack, single image window, or matching series. This can also be applied to their clones.
4. If you do not select the **Default Window/Level** check box, select the desired **Window/Level Preset** to apply a specific Window Width and Level to view a particular anatomy. Note the following:
 - Configured User and System Presets are merged in the **Window/Level Preset** list.
 - If both User and System Window Width/Level Presets are configured for the same modality image and have the same Preset Name, the User Window Width/Level Presets/Value takes precedence and User Presets are displayed.
5. Select the following check boxes as desired:
 - Select the **Scout Line Mode** check box to automatically display scout lines on single images or a stack series. Scout lines are only displayed on MR, CT, and PET series. See [“Using the Scout Tool” on page 274](#).
 - Select the **Localizer Mode** check box to display the Localizer tool on images. When selected, images display the Localizer tool on all images from the same frame of reference. The Localizer tool is only displayed on MR, CT, and PET series. See [“Using the Localizer Tool” on page 275](#).
 - Select the **Invert Image** check box if you want to automatically invert the contrast and brightness of the images that use this hanging protocol. This option is only available for grayscale images. See [“Inverting an Image” on page 268](#).
 - Select the **Don't Auto Hang On Monitors** check box if you do not want to automatically display series when initially hanging or when paging through series. This is used when you do not want certain images (i.e. Scout views) to be automatically hung on the diagnostic monitors.
 - Select the **Flip Horizontal** check box if you want to flip the images on its Y axis.
 - Select the **Flip Vertical** check box if you want to flip the images on its X axis.

- Select the **Rotate 90 CW** check box if you want to rotate the image 90 degrees clockwise.
 - Select the **Rotate 90 CCW** check box if you want to rotate the image 90 degrees counter-clockwise.
 - Select the **Spine Labeling** check box if you want the tool to be present on a specific series. The series must have an associated series matching rule. This option is only available when “use series matching rules” is selected in the first page of the HP.
6. Select the desired **Image Processing** mode, You can select **None**, **Edge Enhance**, **Edge Detect**, **CLAHE**, or **Median Filter**.
 7. Select the desired **Zoom Preset**. You can select **Fit to Window**, **True Size**, **100%** (original size), **200%**, **300%** or **400%**.
 8. **Enable stacking for series that match the same rule:** Select this option to stack all the series that matches the same rule.
 9. Click **Next**. The next screen of the wizard displays, allowing you to set the monitor options for the hanging protocol and also to preview your configured monitor layout selections. See [“Setting Monitor Options” on page 373](#).

Setting Monitor Options

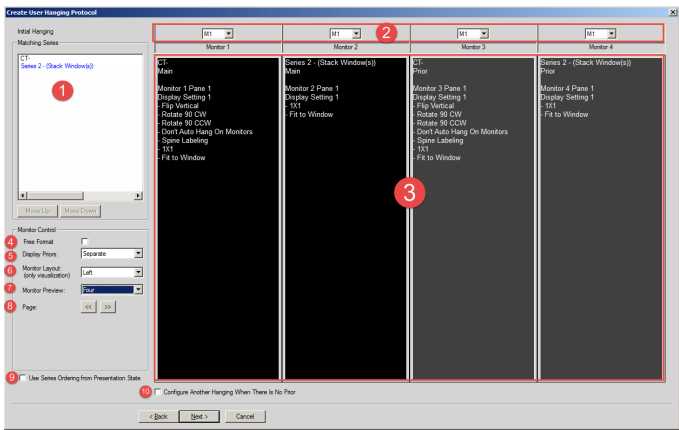
In the third page of the **Create Hanging Protocol** wizard, you define how the exams of this type will display on your diagnostic monitors. If you have selected the **Use Series Matching Rules** check box, the available rules for this particular exam are displayed.

IntelliSpace PACS Radiology supports up to four physical monitors. See [“Hanging Protocols and Monitor Configuration” on page 381](#).

NOTE

The monitor configuration loading differs on one-monitor systems, two-monitor systems, and four-monitor systems.

Page 3 of Hanging Protocol wizard



Label Number	Description
1	Matching Series: The configured matching rules are displayed in this panel
2	Monitors drop-down. Use the drop down list to select a monitor to view the corresponding preview pane.
3	Monitor preview panes.
4	Free Format: Select this option to remove the binding between the monitors and to view each monitor individually.
5	Display Priors: Select the options to display priors.
6	Monitor Layout: Select a monitor layout for viewing
7	Monitor Preview: Select monitor Layout for preview panes
8	Page: Click to move between the matching series. NOTE: This option is enabled only when “Free Format” is not selected.
9	Use Series Ordering from Presentation States: Select this option to inherit the Series Ordering from the Presentation States.
10	Configure Another Hanging When There is No Prior: Select this option to configure another settings for hanging when priors are not available.

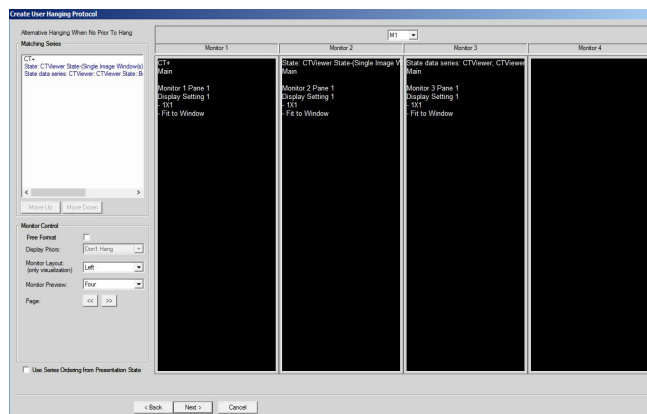
You can do the following in the third page of the **Create Hanging Protocol** wizard:

- Hang current and prior images on the same monitor for comparison. This is especially useful for mammography reading cases.
- Specify the location of the prior images (top, below, left, right, don’t hang, or separate) relative to the main exam image.
- Use the Move Up and Move Down buttons to arrange the Series Matching Rules onto the preview monitors.
- Create links and mirror links between preview monitors. See [“Creating Links and Mirror Links in Preview Monitors” on page 376](#).

- Preview the display on a four diagnostic monitor configuration in the **Create Hanging Protocol** wizard.
1. Review the **Matching Series** list. If the hanging protocol is configured with Series Matching Rules, these are displayed in the list. If the exam has any missing Series Matching rules, the Series Window or Stack Window listings are displayed.
 2. Under **Monitor Control**, select the desired option for **Display Prior Images**. You can use the Monitor Preview list to see how current and prior exams will be laid out.
 - **Top**: Displays prior images above the current images on the same monitor if there is a prior exam. Only the following monitor modes are allowed for this setting: M2H, M4, and M6L.
 - **Below**: Displays prior images below the current images on the same monitor if there is a prior exam. Only the following monitor modes are allowed for this setting: M2H, M4, and M6L.
 - **Left**: Displays prior images to the left of the current images on the same monitor if there is a prior exam. Only the following monitor modes are allowed for this setting: M2V, M4, and M6P.
 - **Right**: Displays prior images to the right of the current images on the same monitor if there is a prior exam. Only the following monitor modes are allowed for this setting: M2V, M4, and M6P.
 - **Don't Hang Prior Images on Monitors**: Displays the current image on all monitors and does not display the prior image on the monitor when first hung.
 - **Separate**: All monitor modes are allowed.
 - **Outside**: Displays prior images to the outside of the current images on the same monitor if there is a prior exam. Only the following monitor modes are allowed for this setting: M2V, M4, and M6P.
 3. Select one of the following layouts for Monitor 1 and Monitor 2: M1, M2H, M2V, M3H, M3V, M4, M6P, M6L, M1_2, M2_1, M1_3, M3_1, M9, M12P, M12L, M16, M20P, M20L or M25.
 4. If you selected the **Use Series Matching Rules** check box in page one of the wizard, the available rules are displayed in the **Matching Series** window. As you change these settings, the display will change to show you how your monitors will hang. The monitors provide additional information about where individual series will go. Rules that are no longer valid are displayed in blue font. Rules with no matching series in the Exam Rack are displayed in red font.
 5. Select a matching series and click **Move Up** or **Move Down** to change the Matching Series order to place them on a specific monitor.
 6. Select one of the following **Split Mode** options to specify how you want hanging protocols to display in virtual-split monitors. This option only applies to one and two physical monitor systems. Note that this option must be enabled in the PACS Administration configuration page in order for this option to be present.
 - **No Split**: The monitors are not split.

- **Vertical Split:** The monitors are split vertically. A system with a single physical monitor is split into a total of two virtual monitors. A system with two physical monitors is split into a total of four virtual monitors.
 - **Horizontal Split:** The monitors are split horizontally. A system with a single physical monitor is split into a total of two virtual monitors. A system with two physical monitors is split into a total of four virtual monitors.
7. Choose the “**Use Series Ordering from Presentation State**” option to apply the series ordering from presentation state instead of hanging protocol.
 8. The **Monitor Preview** area displays how the images will appear on diagnostic monitors, given different machine configurations. The **Monitor Preview** options are **One**, **Two**, and **Four**. The initial setting is based on the current machine configurations. The preview monitors display grids showing split monitors and monitor mode selections for Current and Prior exams. The >> and << buttons are only enabled if the **Use Series Matching Rules** check box is selected with the Hanging Protocol. These buttons allow you to preview on which rack exam Series will display when paging the Main Exam.
 9. Select the option “Configure Another Hanging When There is no Prior” to configure another settings for hanging when priors are not available.
 10. Click **Next**.

The “**Alternate Hanging When No Prior To Hang**” page displays.



11. Click **Next**.
12. If desired, create links or mirror links in the preview monitors. See [“Creating Links and Mirror Links in Preview Monitors” on page 376](#)
13. Click **Next**. The last page of the wizard displays, allowing you to set the main exam settings for the hanging protocol.

Creating Links and Mirror Links in Preview Monitors

NOTE

Mirror linking is only available for mammography exams.

You can create a maximum of five new links and mirror links while configuring a hanging protocol. You can also create links and mirror links from the Canvas Page. See [“Linking Image Series” on page 249](#) and [“Creating Mirror Links” on page 255](#).

1. On page 3 of the **Create Hanging Protocol** wizard, right click in the preview pane that you wish to link to another pane.
2. Select **Create Link** from the menu. A link icon and the link number (from 0 to 5) displays in the lower-left corner of the preview pane.
3. Right click on the next preview pane you want to link to and select **Join Link** or **Join Link (Mirror)**. If there are multiple links defined, you can select the number of the link you wish to join as a link or a mirrored link. A link icon and the same link number as the starting link (from 0 to 5) displays in the lower-left corner of the preview pane.

Removing Links and Mirror Links in Preview Monitors

NOTE

Mirror linking is only available for mammography exams.

1. On page 3 of the **Create Hanging Protocol** wizard, right click in the preview pane that has the link you want to remove.
2. Select **Leave Link** from the menu. The link icon and number are removed.

Main Exam Settings Options

Page 4 of Hanging Protocol wizard

Create User Hanging Protocol

Main Exam Settings

Linking

☐ Axials

☐ Sagittals

☐ Coronals

☐ Obliques

Load Relevant Prior Based On Matching:

☒ Body Part

☐ Modality And Body Part

☐ Mammo

Priors

☐ Hang Multiple Priors

☐ Hang Oldest Prior

Number Of Priors To Load:

☐ Cache Entire Study

☐ Show Spine Label Tool On Sagittal

☐ Vertical Rack

☐ Display CAD Markers

< Back Finish Cancel

1. In the **Main Exam Settings** section, set the desired **Linking** option. These linking options are only applied to the main exam.
 - Link All Axials
 - Link All Sagittals
 - Link All Coronals
 - Link All Obliques
2. Select how you want to load relevant priors:
 - **Body Part Only:** Loads the relevant priors in the Relevant Exam Timeline and the Exam Rack based on matching of the same body part (for example, Body Part CHEST).
 - **Modality and Body Part:** Loads the relevant priors in the Relevant Exam Timeline and the Exam Rack based on matching of the same modality and body part (for Example, Modality CR and Body Part CHEST).

- **Mammo:** When this option is selected, all relevant priors associated with a Mammo identifier, regardless of modality, are loaded in the Relevant Exam Timeline and the Exam Rack.
3. Set the following options as desired.
 - Select the **Hang Multiple Priors** check box and specify how many priors should be loaded. You can load up to 10 multiple priors. Relevant priors are prior exams which pertain to the current exam being viewed. The definition of “Relevant” can be defined by the User as well in the HP Wizard as indicated in the preceding Step 2. Usually, this definition is based on modality and body part criteria. See [“Hanging Relevant Prior Exams” on page 379](#).
 - Select **Hang oldest relevant prior exam** for the oldest relevant prior to be hung instead of the most recent prior.
 - Select the **Cache Entire Study** check box if you want to allow caching of the entire Main Exam into the workstation memory of IntelliSpace PACS Radiology. This option may increase image loading speed, depending on the order in which the images are read.

NOTE: The “Cache Entire Study” option does not cache the exam to the disk.

 - Select the **Show Spine Label Tool on Sagittal** check box, if you want the Spine Label tool to be displayed on sagittal windows.

NOTE: This option will be unavailable if the Spine Labeling tool option is selected for any SMR in the second page of the Hanging Protocol Wizard.

 - Select the **Vertical Rack** check box if you want the rack to be vertical. This preference only applies to the main exam, which means that the hanging of the main exam determines whether the exam uses a horizontal or vertical rack.
 - Select **Display CAD Markers** to view the CAD Markers.
 4. Click **Back** to check or change any information. Click **Finish** to complete creating the hanging protocol. The selected exam is rehung with the hanging protocol you created and the hanging protocol is added to the list of your User or System hanging protocols.

Hanging Relevant Prior Exams

New and prior exams are hung based on the hanging protocol of that exam type (not on whether it is a new exam or a prior). The general mechanism for the selection and hanging of a relevant prior is based on the following:

- The definition of a relevant prior for a given exam type.
- The applicable hanging protocol of the prior exam.
- The number of monitors available to display the prior exam.

If a prior exam is loaded, IntelliSpace PACS applies the hanging protocol of the main exam to the prior if the prior matches the main exam’s hanging protocol identifier, such that

- if the hanging protocol identifier for the main exam is **Modality**, then that hanging protocol will be applied to the prior if the prior is of the same modality as the main exam.
- if the identifier for the main exam HP is **Modality and Body Part**, then that hanging protocol will be applied to the prior if the prior is of the same modality and body part as the main exam.

- if the identifier for the main exam HP is **Hanging Protocol Group**, then that hanging protocol will be applied to the prior if the prior is in the same hanging protocol group as the main exam.
- if the identifier for the main exam HP is **Mammo**, then that hanging protocol will be applied to the prior if the prior has an associated Mammo identifier (only when the Advanced Mammography Features option is enabled).

See [“Hanging Protocol Hierarchy” on page 366](#).

Compare Selected Exam With Prior Exams

When using a hanging protocol that displays images of the selected exam and a prior exam, you can compare the selected exam (for example, the current exam) with all priors by pressing **Next Prior** or **Previous Prior** repeatedly.

The images of the selected exam remain in position on-screen, only the prior images are replaced by the prior images of the next / previous exam that meet the series matching rules in the hanging protocol.

Precondition: A hanging protocol that displays images of the selected exam and the prior exam is selected.

1. Press **Next Prior / Previous Prior** on the keypad. Images from older / newer prior exams as defined by the hanging protocol are displayed, as well as images from the selected exam. The positions of the navigation rectangles on the Canvas Page are updated.
2. To browse through the patient history, press **Next Prior / Previous Prior** repeatedly.

NOTE

- If a hanging protocol that displays no priors is used, pressing Next Prior / Previous Prior replaces the images of the selected exam by images of the next / previous exam that meet the series matching rules in the hanging protocol.
- If a hanging protocol that displays selected and prior exams is used, pressing Next Prior / Previous Prior only replaces the prior exam; the selected exam is unchanged.

Virtual Split Monitors

IntelliSpace PACS Radiology is designed to work with one, two, or four diagnostic monitor displays. However, you can only configure IntelliSpace PACS Radiology for two-monitor hanging protocols (Monitor 1 and Monitor 2).

NOTE

The Virtual Split Monitor feature is not available unless it has been enabled in PACS Administration, and the feature is disabled (OFF) by default.

The Virtual Split Monitor feature is available for one and two monitor systems. This feature is not available on a four-monitor system.

The table below shows how these priors will be distributed between physical Diagnostic Monitors and Virtual-Split Monitors.

# of Virtual Monitors	# of Priors Loaded	Description
1	N/A	Reticule hung on main exam
2	0	Both Reticules hung on main exam
2	1+	Reticule 1 on main exam, Reticule 2 on prior
4	0	Reticule 1 on main exam Reticule 2 on main exam Reticule 3 not hung Reticule 4 not hung
4	1	Reticule 1 on main exam Reticule 2 on main exam Reticule 3 hung on prior Reticule 4 hung on prior
4	2+	Reticule 1 on main exam Reticule 2 on main exam Reticule 3 hung on prior 1 Reticule 4 hung on prior 2

Hanging Protocols and Monitor Configuration

Not all workstations have the same monitor configuration, so you need to understand what happens to a hanging protocol when logging into a system with a different monitor configuration. Hanging protocols are optimized to work with one, two, or four diagnostic monitor displays.

You can use the F2 key to toggle between what is visible (that is, Monitor 1) and what might not be visible (that is, Monitor 2) on a two-monitor system configuration. Note the following:

- On a one-monitor system, the F2 key toggles between the first and second series.
- Monitor 2 is considered a virtual monitor on a two-monitor system.
- On a four-monitor system, the F2 key does not have any functionality.

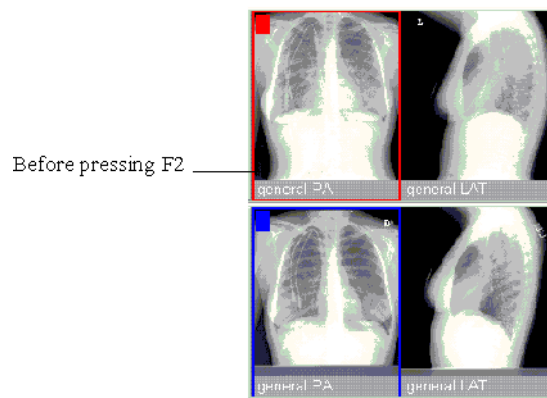
In the following example, a Two-Monitor hanging protocol has been created as follows:

- Hanging Protocol Name: CR CHEST (one PA, one Lateral)
- Monitor 1: General PA
- Monitor 2: General LAT

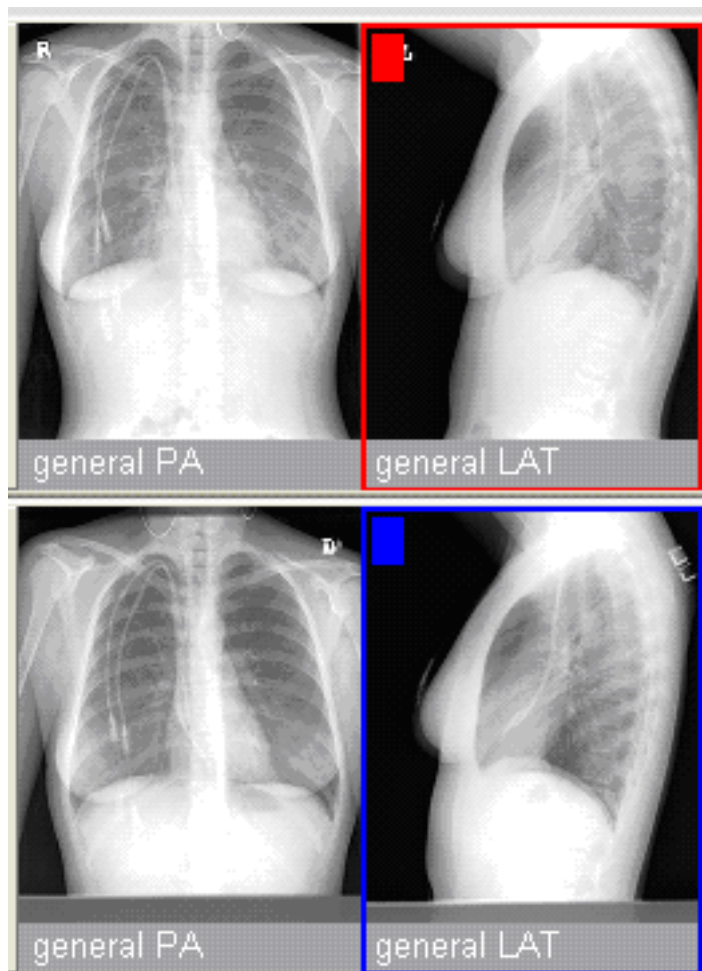
The following table shows how the hanging protocol is applied, based on the number of monitors available for an exam and whether or not there is a relevant prior available.

Number of Monitors	Relevant Prior Found?	Monitor 1	Monitor 2	Monitor 3	Monitor 4
1	No	New Exam General PA >> New Exam General LAT	N/A	N/A	N/A
1	Yes	New Exam General PA >> New Exam General LAT	N/A	N/A	N/A
2	No	New Exam General PA >> N/A	New Exam General LAT >> N/A	N/A	N/A
2	Yes	New Exam General PA >> New Exam General LAT	Prior Exam General PA >> Prior Exam General LAT	N/A	N/A
4	No	New Exam General PA >> N/A	New Exam General LAT >> N/A	Empty	Empty
4	Yes	New Exam General PA >> N/A	New Exam General LAT >> N/A	Prior Exam General PA >> N/A	Prior Exam General PA >> N/A

The following would display for a two-monitor system with a relevant prior found. You can use the F2 key to switch between what is displayed for Monitor 1 configurations and what is displayed on the second monitor.



The following would display when you pressed F2 to move the rectangles to the virtual monitors.



Mammo-specific Hanging Protocols and Series Matching Rules

NOTE

The following hanging protocol information applies only to mammography. These are preconfigured series matching rules, hangings, and hanging sequences, and are for mammography only.

After installing IntelliSpace PACS, the PACS system is not yet configured with Series Matching Rules, Hanging Protocols, and Hanging Protocol Sequences that are specific to mammography. The following procedures describe how to configure IntelliSpace PACS Radiology with default Series Matching Rules, Hanging Protocols, and Hanging Protocol Sequences for mammography exams.

- [“Preparing IntelliSpace PACS Radiology” on page 384](#)
- [“Configuring Default Series Matching Rules for Mammography” on page 384](#)
- [“Configuring Default Hanging Protocols for Mammography” on page 385](#)
- [“Configuring Default Hanging Protocol Sequences for Mammography” on page 385](#)

Preparing IntelliSpace PACS Radiology

1. Log on to IntelliSpace PACS Radiology as a Windows Administrator.
2. Open Windows Explorer and browse to one of the following locations:
 - If this is a new installation of IntelliSpace PACS 4.4 (not an upgrade) on Windows 7 (64-bit), browse to C:\Program Files (x86)\Philips\IntelliSpace PACS Radiology\4.4\Defaults
 - If this is a new installation of IntelliSpace PACS 4.4 (not an upgrade) on either Windows XP/Windows 7 (32-bit) or Windows 8.1, browse to C:\Program Files\Philips\IntelliSpace PACS Radiology\4.4\Defaults
 - If this is an upgrade from iSite PACS 3.6 to IntelliSpace PACS 4.4, browse to C:\Program Files\Philips\iSiteRadiology\4.1\defaults
3. Unzip the file **MammoDefaultRules.zip** found in the Defaults folder.
4. You will see two folders: **MammoSMR** and **MammoHP**.

Configuring Default Series Matching Rules for Mammography

1. Log on to IntelliSpace PACS Radiology as an Administrator user.
2. Open an exam in the Canvas Page.
3. Right-click an image to open the context (right-click) menu.
4. From the menu, select **Series Matching Rules**. The Series Matching Rules dialog displays.

5. In the **Series Matching Rules** dialog, click the **Import All** button.
6. Browse to the same location that you did in the preceding section “Preparing IntelliSpace PACS Radiology” and open **HPSeriesMatchingRules.xml**.
7. The default Series Matching Rules for mammography exams should now be visible in the dialog:
 - **MLO R**
 - **MLO L**
 - **CC R**
 - **CC L**
8. Click **OK**.

Configuring Default Hanging Protocols for Mammography

1. Log on to IntelliSpace PACS Radiology as an Administrator user.
2. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip. The Preferences dialog displays.
3. Click the + sign next to System Preferences. The list of available System Preferences displays.
4. Click **Hanging Protocols**.
5. In the Hanging Protocols dialog, click the **Import** button.
6. Browse to the same location that you did in the section “Preparing IntelliSpace PACS Radiology”, select the XML file(s), and then click **OK**.
7. The imported Hanging Protocol(s) should now be visible in the list of Hanging Protocols.

Configuring Default Hanging Protocol Sequences for Mammography

The sequence of hanging protocols must be defined manually. You will need to define two sequences:

- Default HP Sequence **with priors**
- Default HP Sequence for **no priors**

To create a default HP Sequence for “no priors”, perform the following steps:

1. Log on to IntelliSpace PACS Radiology as an Administrator user.
2. Open an exam in the Canvas Page.
3. Right-click the Exam Margin to open the context (right-click) menu.
4. From the context menu, select **Create System Hanging Protocol Sequence**.
5. Configure the Hanging Protocol Sequence for “**no priors**” as shown in the following screen:

- **1:** Name of System HP Sequence – **No Priors**
 - **2:** Sequence Identifier – select the **Mammo** radio button
 - **3:** Applicability – select the **Default** radio button
 - **4:** Selected Hanging Protocols – Move the three HPs from the System Protocols field (under Matching Hanging Protocols:) by selecting them and clicking **Add** to move them into the **Selected Hanging Protocols** box. Select an HP and click **Move Up/Move Down** to change the order of the HPs displayed in the Selected Hanging Protocols box. For more information regarding the HPs, see [“Default Hanging Protocols for Mammography”](#) on page 388.
6. When you are done, click **OK**.

To create a default HP Sequence “with priors”, perform the following steps:

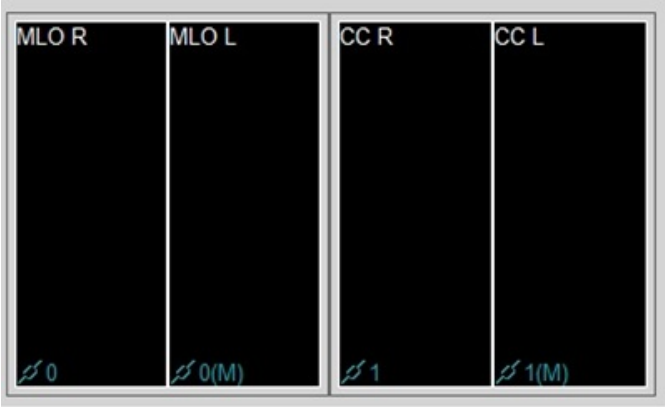
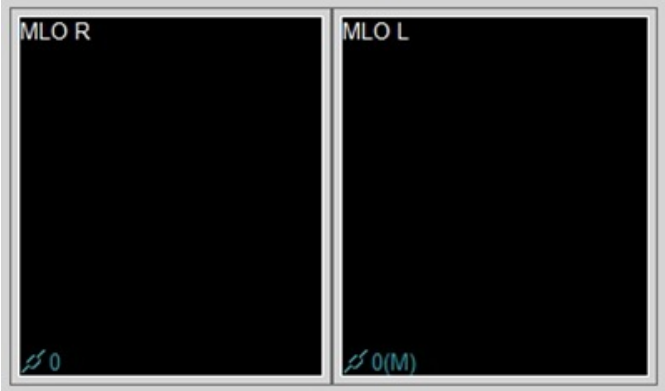
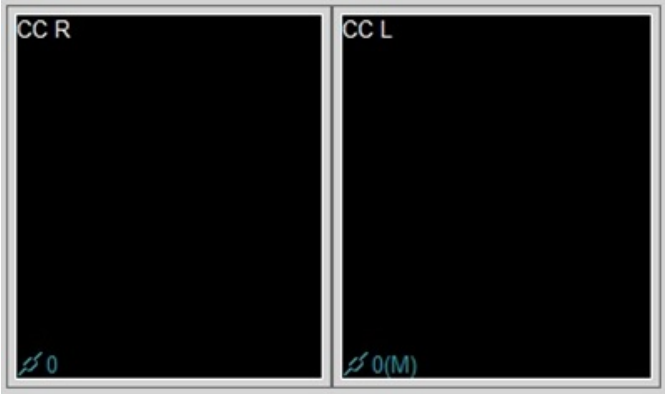
1. In the Canvas Page, from the context menu, click **Create System Hanging Protocol Sequence**.
2. Configure the Hanging Protocol Sequence for “**with priors**” as shown in the following screen:

- **1:** Name of System HP Sequence – **With Priors**
- **2:** Sequence Identifier – select the **Mammo** radio button
- **3:** Applicability – select the **Default if priors are available** radio button
- **4:** Selected Hanging Protocols – Move the seven HPs from the System Protocols field (under Matching Hanging Protocols:) by selecting them and clicking **Add** to move them into the **Selected Hanging Protocols** box. To order the HPs, select an HP and use the **Move Up/Move Down** buttons. For more information regarding the HPs, see [“Default Hanging Protocols for Mammography” on page 388](#).

3. When you are done, click **OK**.

Default Hanging Protocols for Mammography

IntelliSpace PACS provides default hanging protocols for mammography exams. The following table gives the name of the default hanging protocol, along with a visualization for each HP, as a system with two diagnostic monitors. The black monitors show the current or selected exam, while the gray monitors show the prior exam(s). Note that the Advanced Mammography Features option must be enabled in iSite Web by Philips personnel.

Default Hanging Protocol	Visualization of HP with 2 Diagnostic Monitors
001 - no priors, overview	
002 - no priors, MLO	
002b - no priors, CC	

Default Hanging Protocol

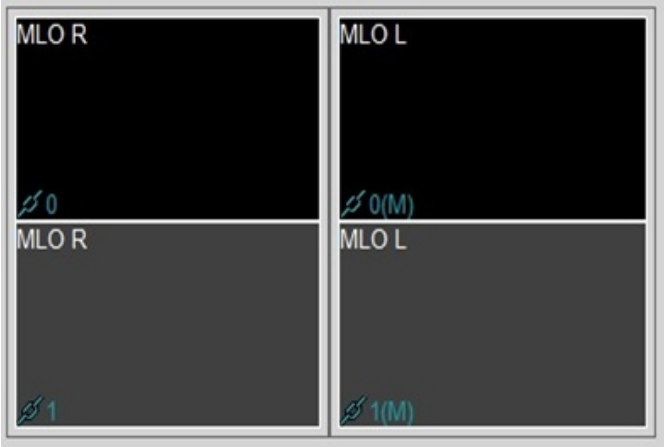
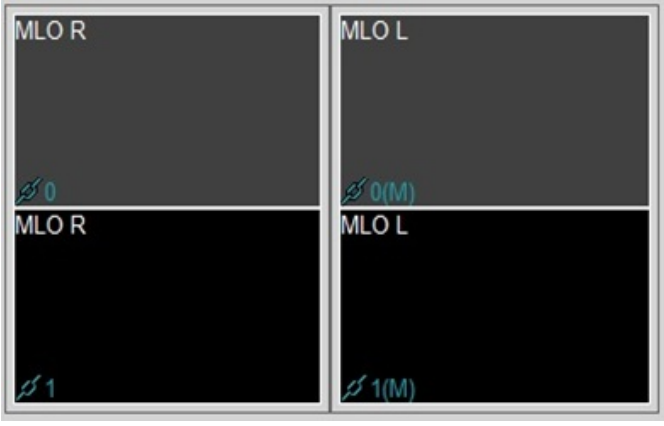
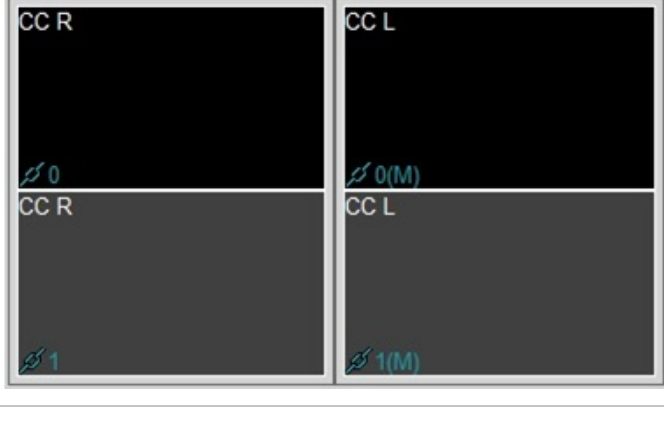
Visualization of HP with 2 Diagnostic Monitors

003 - with priors bottom, overview



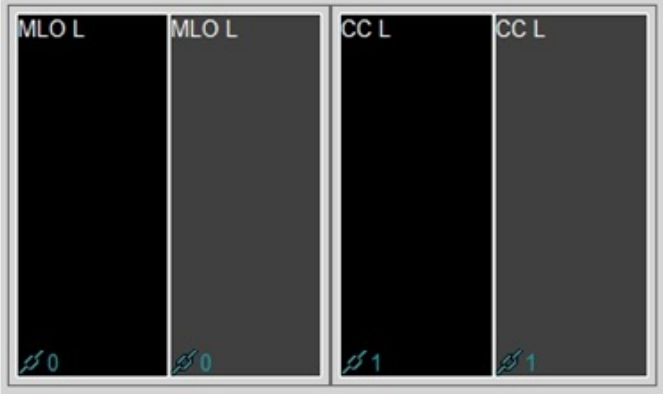
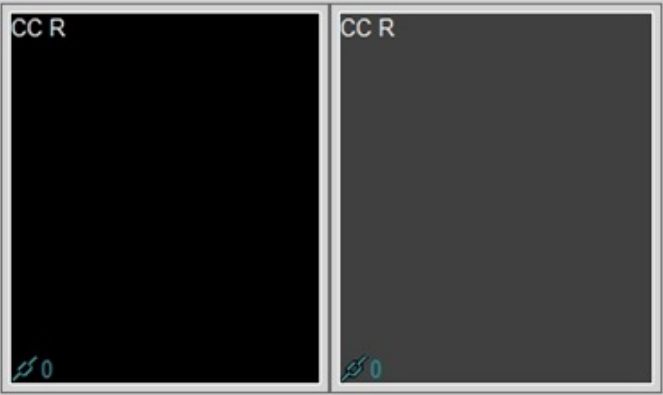
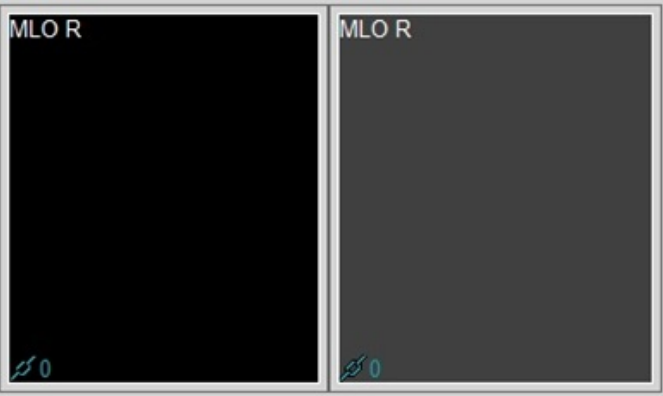
003b - with priors top, overview

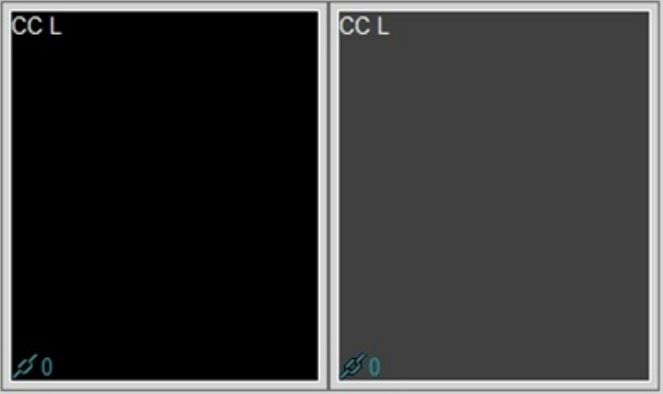
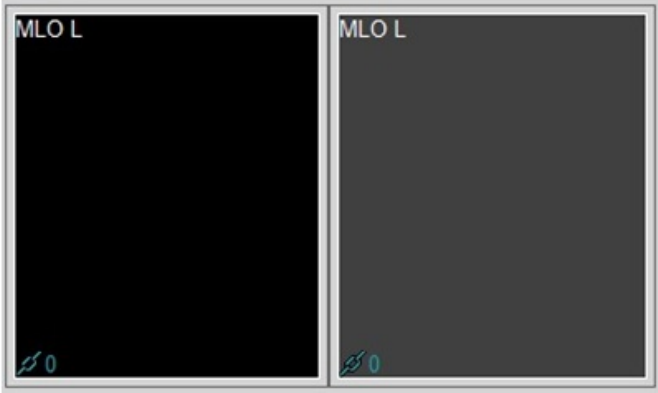


Default Hanging Protocol	Visualization of HP with 2 Diagnostic Monitors
003c - with priors bottom, MLO	
003d - with priors top, MLO	
003e - with priors bottom, CC	

Default Hanging Protocol	Visualization of HP with 2 Diagnostic Monitors
003f - with priors top, CC	
003g - with priors separate, overview	
003h - with priors, compare R	

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Default Hanging Protocol	Visualization of HP with 2 Diagnostic Monitors
003i - with priors, compare L	
005b - with priors, compare CC R	
005c - with priors, compare MLO R	

Default Hanging Protocol	Visualization of HP with 2 Diagnostic Monitors
005d - with priors, compare CC L	
005e - with priors, compare MLO L	

Using the Default HP Sequences for Mammography

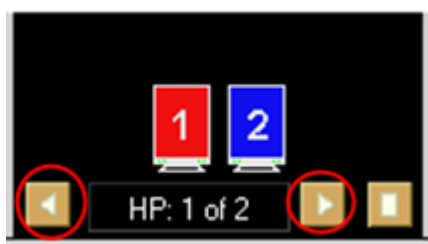
The arrangement of images on the diagnostic monitors is determined by a hanging protocol – a set of rules that can be used only by the system to determine the arrangement and presentation of images on the screen.

IntelliSpace PACS Radiology is configured with several sequences of hanging protocols (as seen in [“Preparing IntelliSpace PACS Radiology” on page 384](#) and [“Configuring Default Hanging Protocol Sequences for Mammography” on page 385](#)), specifically designed for viewing mammography images. A number of hanging protocols display priors – images from previous examinations of the patient.

IntelliSpace PACS Radiology automatically applies the first hanging protocol in the default sequence.

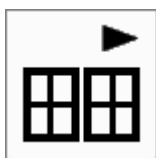
You can cycle through the different protocols in the HP sequence, using either of the following methods:

- Use the arrows in the toolbar for HP sequences that sits in the timeline under the monitor icons

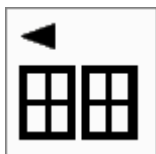


- Use the keypad to navigate through the applicable hanging protocols: **Next Hanging** and **Previous Hanging**.

Next Hanging

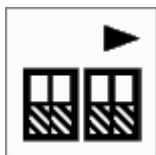


Previous Hanging

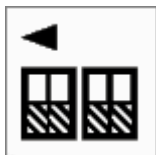


In addition, you can use the keypad to navigate through the available prior examinations: **Next Prior** and **Previous Prior**.

Next Prior

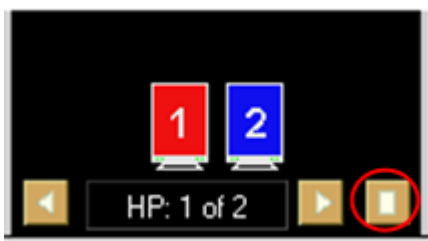


Previous Prior



You also can choose to display or hide the priors. Right-click in the Exam Margin, choose **Select System HP Sequence**, and select the desired sequence.

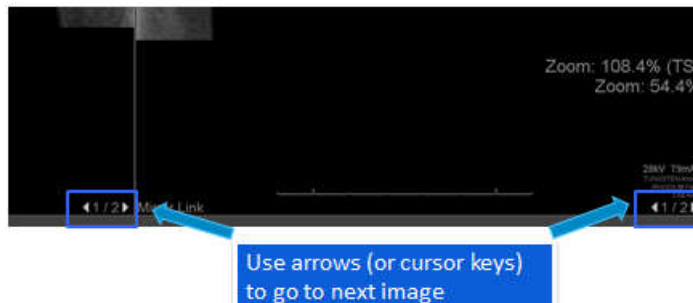
To reset the hanging protocol, right-click in the **Exam Margin** and select **Rehang** from the menu, or click the Rehang button, below the Monitor Reference icon.



Series Stacking with same Series Matching Rules

Series that share the same Series Matching Rule (SMR) in a Hanging

Series that share the same Series Matching Rule (SMR) in a Hanging Protocol (HP) are now stacked automatically based on the HP configuration, when they are hung on the diagnostic monitor. See [“Main Exam Settings Options” on page 377](#)



Selecting Hanging Protocols

1. Right-click in the Exam Margin and from the menu, select **User Hanging Protocol** or **System Hanging Protocol**. If you select **User Hanging Protocol**, a window displays all the available User hanging protocols available for the modality of the current exam.
2. Browse through the available hanging protocols by expanding the directory tree.
3. Click the desired hanging protocol to rehang the exam you are viewing or select the hanging protocol and click **OK**.

Editing a Hanging Protocol

When you edit a hanging protocol for the exam being viewed, after you press **Finish**, your changes are applied to the exam. If the exam being viewed is the main exam, all relevant priors are reloaded.

1. Right-click in the Exam Margin and from the menu, select **Edit Hanging Protocol**. The first page of the **Edit Hanging Protocol** wizard displays. Rules that are no longer valid are displayed in blue font. Rules with no matching series in the Exam Rack are displayed in red font.
2. Follow the instructions in [“Configuring Hanging Protocols” on page 368](#).

Simultaneous Edit of Same System Hanging Protocol

If multiple users are editing the same system hanging protocol, a conflict will occur. The second user will receive the following error message “You are trying to modify an already modified Hanging Protocol” and will not be able to save their changes.

When two users are editing the same system hanging protocol at the same time, on modifying the name or deleting the System hanging protocol which is saved by the first user, the second user get an error message as “You are trying to modify an already modified Hanging Protocol”.

Viewing the Hanging Protocols for Other Modalities

- ▶ Right-click in the Exam Margin and from the menu, select **Other Protocols**.

Reverting to the Original Presentation of the Hanging Protocol

- ▶ Right-click in the Exam Margin and from the menu, select **Rehang**.

Hanging Protocols and Presentation States

Hanging protocols have the following relationship to presentation states that affects how exams may be displayed. See [“Selecting a Presentation State” on page 228](#). Note the following:

- Presentation state settings for image states created by a Radiologist (with Mark Read), a Resident (with Pre-Read), or a Technologist override hanging protocol selections for the same settings.
- When you open an exam, the presentation state with the highest priority is presented.
- The most recent presentation state for the highest priority presentation state is applied to the exam.
- When you open an exam and a presentation state is applied (such as Mark Read), the presentation state settings for the exam override the hanging protocol settings for **Invert**, **Clones**, **WW/WL**, and **Series Matching Rules** sorting. If you select, edit, or create a hanging protocol for this type of exam, all the hanging protocol features are applied, regardless of any presentation states.
- If the exam has only an original DICOM presentation state or only a user presentation state, the hanging protocol is applied when the exam is opened in the Canvas Page. If you select, edit, or create a presentation state from this exam, it is applied regardless of any hanging protocol.

When you select a presentation state, any modifications based on the following features are displayed:

- Window Width and Window Level
- Measurements, excluding Point Value
- Annotations
- Invert Image
- VOI LUT

- Clone
- Key Images
- Flip
- Rotate
- Sort
- Split

Presentation states have the following priorities:

- “Mark Read” presentation state has the highest priority. If a “Mark Read” presentation state has been defined, it is automatically applied.
- “Pre-Read” presentation state is the second highest priority. The “Pre-Read” presentation state enables a Radiologist or a Resident to save image presentation modifications without requiring the exam be “Mark Read”, so the Radiologist or Resident can return to the exam later.
- “Technologist” presentation state enables the Technologist to modify image presentation before the Radiologist views and interprets the exam.
- “Original DICOM” Image Presentation is automatically applied to the exam if no presentation states have been defined for this exam, and if there is no hanging protocol configured with image state settings.
- “User” presentation state enables specialists to modify image presentation before and after the Radiologist has interpreted the image, without affecting the monitor.

Manual Hanging

In most cases, the available hanging protocols and hanging protocol sequence display all the images of interest in a patient case. However, you can hang individual images and/or series manually.

There are two ways to manually hang images:

- By manually selecting images from the rack or by selecting images on the diagnostic monitor

This can be done either by replacing the images or by swapping the images. Use the keys mentioned in the table below to manually hang the images.

To	Keys
Swap	Left Click (Bottom of the Image)
Swap	D + Left Click (Anywhere on the image)
Replace	Shift + Left Click (Bottom of the image)(
Replace	Shift + D + Left Click (Anywhere on the image)(

- By selecting images from manual hanging panel

Images are hung by dragging image thumbnails from the Manual Hanging panel to the desired location on the diagnostic monitor(s).

1. To display the Manual Hanging panel, do one of the following:
 - Click on the bar at the bottom of the screen of a diagnostic monitor.
 - Use the keyboard shortcut, see Notes.
2. Drag a thumbnail from the shelf in the Manual Hanging panel to a diagnostic monitor. A copy of the thumbnail moves with the mouse pointer. The mouse pointer indicates when the pointer is positioned over a diagnostic monitor. Drop the thumbnail in the desired region of the monitor.
3. Drag a clone of the thumbnail from the shelf in the Manual Hanging panel to a diagnostic monitor using right mouse button.

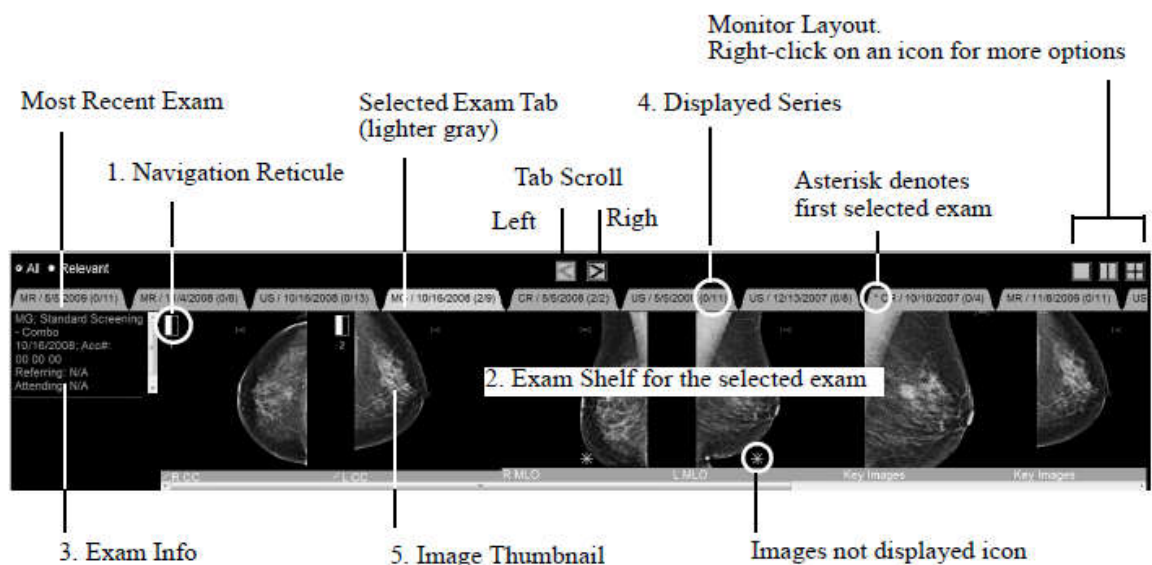
NOTE

- A keyboard shortcut to show/hide the Manual Hanging panel can be set in the User preferences.
- If the Manual Hanging panel is opened by clicking on the bar on the diagnostic monitor, the panel can be hidden as follows. Move the mouse pointer outside the panel to any image on the diagnostic monitor. Press any mouse button (includes the mouse wheel) or rotate the mouse wheel.

Manual Hanging Panel

The Manual Hanging panel has one or more tabbed sheets. Each tabbed sheet corresponds to one exam. The tabs are arranged in chronological order with the most recent exam on the left. By default, all exams are shown as thumbnails in the manual hanging dialog.

Each tabbed sheet contains exam information and a shelf of image thumbnails that represent the images and/or image series of the corresponding exam. The panel is a tabbed representation of the Canvas Page. However, the Manual Hanging panel does not show the thumbnails of key images, because key image series cannot be hung on the diagnostic monitors.

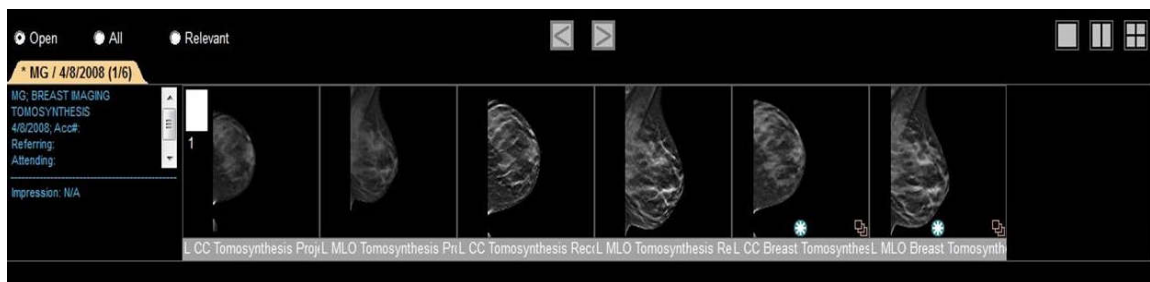


The following items have a similar function to their equivalents on the Canvas Page.

- 1. Navigation reticule:** Shows where on the diagnostic monitor the series is displayed. The Navigation reticule icons are numbered. The number corresponds to the diagnostic monitor.
- 2. Exam Shelf:** Displays and lets you arrange exams for diagnostic review on your diagnostic monitors. Also gives a quick contextual view of the selected exam. The Manual Hanging panel only shows the thumbnails of the selected exam. Click on the other tabs to show the thumbnails of the other exams.
- 3. Exam Info:** Displays information about the exam, including modality, body part, date of acquisition, accession number, referring physician, reason for study, and status. Same information as on the Canvas Page.
- 4. Displayed series (d/n):** d is the number of images or series in the exam that are displayed on the diagnostic monitors. n is the number of images or series in the exam.
- 5. Image Thumbnail:** Displays thumbnail diagnostic images and/or image series of an exam. Each thumbnail has an information bar below it. If the relevant System Preference is set, an asterisk at the bottom of a thumbnail indicates that none of the images represented by the thumbnail have been displayed (excluded are thumbnails that represent collections, key images, captured images, or clones).

NOTE

- The first time that the manual hanging panel is opened, the tab that corresponds to the selected exam is selected. Until another protocol is applied, the first-selected exam is identified by an asterisk on the exam tab.
- After an image or series has been hung manually, the system applies breast fit-to-window and autoscaling. Depending on the type of image and acquisition characteristics, the image will be vertically aligned with the adjacent image.
- To reset the hanging protocol, click the button [Rehang] below the Monitor Reference icons on the Canvas Page. The Manual Hanging panel is hidden.
- By default, all exams of the patient are shown as thumbnails in the Manual Hanging panel; the option button Relevant is selected. This can be useful when the Canvas Page is not visible. To show only the exams that meet certain criteria such as hanging protocol or image type (e.g., mammo), select the option button [Relevant]. The criteria are set in the hanging protocol configuration.
- To change the screen layout on the diagnostic monitor, e.g., to create more places to hang images, use the monitor layout icons.
- If a closed exam on the Canvas Page is opened in the Manual Hanging panel, the exam is opened on the Canvas Page.
- Image thumbnails can be dragged to any diagnostic monitor, but the Manual Hanging panel cannot be dragged. The Manual Hanging panel can be opened on any diagnostic monitor.
- If a thumbnail is part of a collection, the collection icon is shown in the lower left corner of the thumbnail on the Canvas Page.
- An image can only be hung in one position at a time on the diagnostic monitors. If an image thumbnail is dropped onto a pane while the corresponding series is already displayed in another pane, the series will be removed from the other pane.
- When hanging images or series manually, the User Preference setting Disable Navigation Rectangle Splitting is ignored, allowing the diagnostic monitor screen to be split.

Tomosynthesis Indicator

A stack indicator icon  is displayed on the thumbnail area for the Tomo-Synthesis series.

Series Matching Rules

Series Matching Rules are sub-features of hanging protocols and allow you to do the following:

- Automatically sort series without having to create presentation states
- Automatically apply the following features to specific series
 - Clone
 - Multi-Image Mode
 - Window Width/Level Presets
 - Scout Mode
 - Localizer Mode
 - Image Invert

By default, series/images are sorted in the rack based on the DICOM Source system configuration settings (by acquisition time, alphabetically, and so on). Sometimes, however, this default sort order does not fit the Radiologist's needs. For example, a Radiologist might always want CR PA Chests to be displayed as the first image in the Exam Rack.

NOTE

It is common for technologists to acquire the same series multiple times, for example, when a patient moves during the acquisition the first time. In that case IntelliSpace PACS will receive the same series multiple times. However, the Hanging Protocol using Series Matching Rules will only display the first matching series and skip the other ones.

The Technologist or Radiologist could sort the series or images manually and create a presentation state every time. However, if a user always wants a certain type of exam to be displayed a certain way, it is inefficient to repeatedly create a presentation state just for the sort order.

By creating a hanging protocol using Series Matching Rules, the relevant series/images can be sorted automatically without having to create Presentation States.

NOTE

You should only create one rule for each type of series or image.

Adding a Series Matching Rule

The first step in creating a library of rules is to talk with your IntelliSpace PACS Radiology users to determine which series and images require Series Matching Rules. Next, you should determine which modalities in your facility are creating these types of series and images. For example, if a Radiologist asks for a Series Matching Rule for CR Femur AP, the rule must be configured for all modalities that send CR Femur AP images.

You can also export Series Matching Rules from your system for use in a different organization or environment.

NOTE

Philips strongly recommends that you use DICOM tag Series Description (0x0008103e) in most instances as the key defining attribute for most series. If you provide consistent and predictable values in the Series Description DICOM tags, you will not have to redefine Series Matching Rules and Hanging Protocols in IntelliSpace PACS when new modalities are added.

1. Select the image that you would like to use to define a Series Matching Rule and from the menu select **Series Matching Rules**. The **Series Matching Rules** dialog box displays. You use the top half of the dialog box to add, edit, and delete Series Matching Rules. The bottom half of the dialog box displays the Series Matching Rule in tree view.

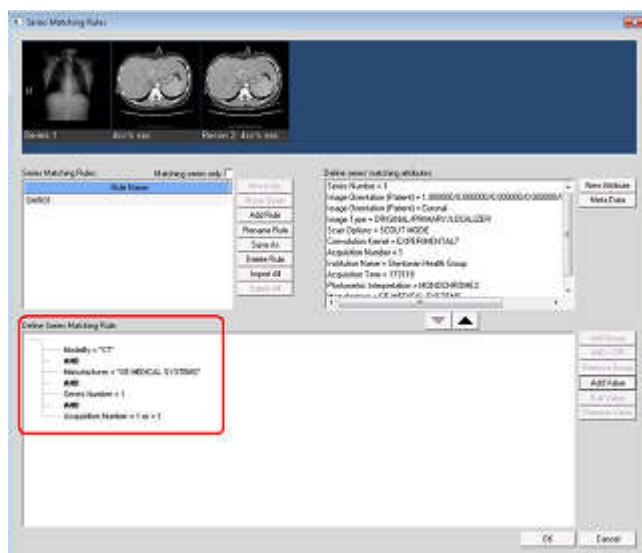


Fig. 57: Series Matching Rules dialog

2. If you would like to import an existing Matching Series Rule, click **Import All**, select the appropriate .xml file, and click **OK**.
3. Click **Add Rule**. The following predefined DICOM tags can be displayed for series which are applicable or for which there is a value in the metadata:
 - Institution Name (0008, 0080)
 - Acquisition Time (0008, 0032)

- Image Laterality (0020, 0062)
 - Photometric Interpretation (0028, 0004)
 - Manufacturer (0008, 0070)
4. Enter a name for the new rule in the **New Rule Name** field that will be recognizable by the Radiologists who will create hanging protocols using this rule.
 5. Select any of the predefined DICOM tags in the **Define series' matching attributes** list and click the down pointing arrow to add that attribute to the **Define Series Matching Rule** pane.
 6. Do any of the following:
 - Click **New Attribute** to add a new series attribute. The **Add Series Attribute** dialog box displays. Enter the **Name**, **DICOM Tag ID**, **Sub-tag ID**, **Tag Type**, **Tag Operator**, **Matching Value**, and **Pre-defined Tags** and click **OK**. See 'Using a Wildcard Operator' (see page 479) for more information on using a wildcard operator.
 - Select a tag and click **MetaData** to display metadata in a separate window.
 - Click **AND** in the **Define Series Matching Rule** pane and then click **Add Group** to add a group below the currently selected group. When a new group is added, it is the opposite group type of its parent group. For example, if you add a sub-group to an AND group it will be an OR group.
 - Click **AND>OR** to create and/or relationships when configuring . This button toggles between **AND>OR** and **OR>AND**.
 - Click **Remove Group** to remove the group that is currently highlighted.
 - Select an attribute in the **Define Series Matching Rule** pane and then click **Add Value** or **Edit Value** to define operators (such as Equal, Not equal, Less than, Greater than) for the selected value, depending on whether the value is text or numeric.
 - Click **Remove Value** to delete the selected value.
 7. Continue selecting the attributes (DICOM tags) that will be used as common identifiers for the rule by selecting an attribute from the **Define series' matching attributes** pane and click the down arrow below the pane. You can add up to 50 different DICOM Tag Values.
 8. When you are finished, click **OK**.

NOTE

To create non-unique duplicate series matching rule for your facilities workflow, you can add a blank "OR" group to an existing HP series matching rule in order to remain unique.

Using a Wildcard Operator

When defining a Series Matching Rule, you can use a wildcard operator. A wildcard operator (the character '*') is only effective when choosing the operator '**Contains**'. For example, it can be used as follows: the string 'Spatial Enhancement SA LV - 1' will be matched with 'Spatial*SA*' if you choose the operator '**Contains**'. This is also true for numbers such that, '2*45' will match '12345'.

Has Value and Has No Value

Usage of Has Value and Has No Value:

Often the DICOM Contrast tag uses a type of contrast which may vary. But the presence of the DICOM is important. When contrast is not applied, the DICOM tag would be blank. It is useful to have SMR's for both the above said conditions and ensure to build HP's for the Radiologists with reliable SMR's.

The Has Value and Has No Value attributes can be used to differentiate the contrast.

Adding a Series Matching Rule Groups

When the series stacking is enabled the order of the series is rendered based on the rack order in the viewing pane. Adding a "Series Matching Rule Groups" option allows the user to define the order of the images in series stacking mode for viewing convenience.

The first step in creating a library of groups is to have Series Matching Rules defined.

Next, you should determine which modalities in your facility are creating series matching rules, which can be used in series stacking mode.

For example, if a radiologist wants to see synthetic 2D first and then the Tomo series in a series stacking mode, a group can be created defining this order using the relevant series matching rules.

You can also export Series Matching Rules Groups from your system for use in a different organization or environment.

1. Select the image that you would like to use to define a Series Matching Rule Group and from the context menu select "**Series Matching Rule Groups**".

The **Manage Series Matching Rule Groups** dialog box displays.

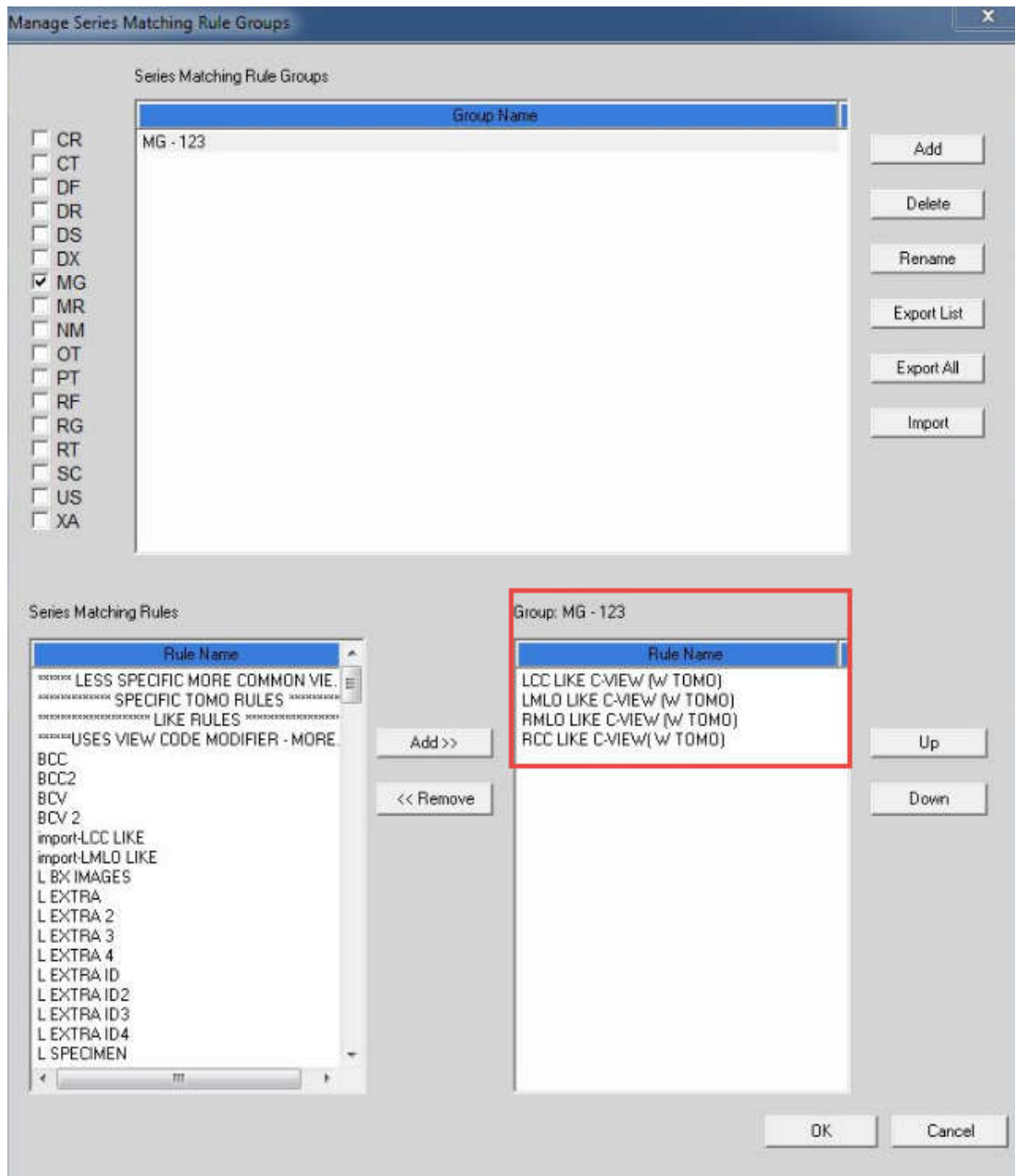
The modalities are listed on the left side of the top half of the dialog box.

- Choose a modality by selecting the check box for which the relevant series matching rule group can be added, edited, and deleted.

The bottom half of the dialog box displays the Series Matching Rules based on the modality selected above.

2. Select a modality and click **Add** to add the modality to new group.
⇒ The **New Rule Group Name** window displays.
3. Enter the name for the group and click **OK**.
⇒ The new group will be displayed in the Series Matching Rule Groups pane.

4. Select the group to add the Series Matching Rules.
5. Select the required Series Matching Rule(s) from the **Series Matching Rules** pane
6. Click **Add** to add the selected Series Matching Rule(s) to the **Group** pane.
7. Use the **Up** and **Down** buttons to define the order of Series Matching Rules in the **Group** pane.



8. Click **OK** to exit the Manage Series Rule Group dialog box.

Configuring Hanging Protocol Sequences

After User or System hanging protocols have been configured, you can define the sequence in which they are displayed. You can do the following:

- Add a User or System Hanging Protocol Sequence: See [“Adding a User or System Hanging Protocol Sequence” on page 407](#)
- Edit a User or System Hanging Protocol Sequence: See [“Editing a User or System Hanging Protocol Sequence” on page 408](#)
- Select a User or System Hanging Protocol Sequence: See [“Selecting a User or System Hanging Protocol Sequence” on page 408](#)

IntelliSpace PACS automatically selects the best hanging protocol sequence in the following order. For more information on hanging protocol hierarchy, see [“Hanging Protocol Hierarchy” on page 366](#).

1. User HP Sequence (Default if priors are available), for matching HP group code
2. User HP Sequence (Default), for matching HP group code
3. System HP Sequence (Default if priors are available), for matching HP group code
4. System HP Sequence (Default), for matching HP group code
5. User HP matching HP group code
6. System HP matching HP group code
7. User HP Sequence (Default if priors are available), matching Mammo code (only if Advanced Mammography Feature option is enabled)
8. User HP Sequence (Default), matching Mammo code (only if Advanced Mammography Feature option is enabled)
9. System HP Sequence (Default if priors are available), matching Mammo code (only if Advanced Mammography Feature option is enabled)
10. System HP Sequence (Default), matching Mammo code (only if Advanced Mammography Feature option is enabled)
11. User HP matching Mammo code (only if Advanced Mammography Feature option is enabled)
12. System HP matching Mammo code (only if Advanced Mammography Feature option is enabled)
13. User HP Sequence (Default if priors are available), matching Modality Type & Body Part
14. User HP Sequence (Default), matching Modality Type & Body Part
15. System HP Sequence (Default if priors are available), matching Modality Type & Body Part
16. System HP Sequence (Default), matching Modality Type & Body Part
17. User HP matching Modality Type & Body Part
18. System HP matching Modality Type & Body Part
19. User HP Sequence (Default if priors are available), matching Modality Type
20. User HP Sequence (Default), matching Modality Type

21. System HP Sequence (Default if priors are available), matching Modality Type
22. System HP Sequence (Default), matching Modality Type
23. User HP matching Modality Type
24. System HP matching Modality Type

NOTE

Applicable only if the Advanced Mammography Features are enabled.

NOTE

If you display CAD markers in any hanging protocol sequence or Conference Presentation State, the CAD markers continue to be displayed for the entire sequence. Likewise, if you hide CAD markers in any hanging protocol sequence or Conference Presentation State, the CAD markers continue to be hidden for the entire sequence.

Adding a User or System Hanging Protocol Sequence

1. Right-click in the Exam Margin and select **Create User HP Sequence** or **Create System HP Sequence**. The **Create Hanging Protocol Sequence** dialog box opens.
2. Enter the **Name** of the sequence.
3. Select one of the following as the **Sequence Identifier**:
 - **Modality**
 - **Modality and Body Part**
 - **Hanging Protocol Group**
 - **Mammo** (when the Advanced **Mammography Feature** option is enabled)
 - **Exam Code**
4. Select the **Applicability** for the hanging protocol sequence:
 - **Default**
 - **Default if priors are available**
 - **Alternate**
5. Select one of the following for the hanging protocol type:
 - **Default**
 - **Alternate**
6. Select the hanging protocol in the **Matching Hanging Protocols** list and click **Add** to move it to the **Selected Hanging Protocols** list. Continue to do this until all desired hanging protocols have been selected.
7. Click **Move Up** or **Move Down** to rearrange the hanging protocols in the **Selected Hanging Protocols** list, if necessary.

8. Select the **Monitors** check box to see a visual representation of the HP Sequence.
9. Click **OK** to finish the creation of the HP Sequence.

Editing a User or System Hanging Protocol Sequence

Before you can edit an HP Sequence, you must select it first.

1. Open an exam, right-click in the **Exam Margin**, and select the HP Sequence you wish to edit.
2. Right-click in the Exam Margin again and select **Edit HP Sequence**. The **Edit HP Sequence** dialog box opens.
3. Review or edit the **Name** of the sequence.
4. Select whether you want a **Default** or **Alternate** hanging protocol type.
5. Select the hanging protocol in the **Matching Hanging Protocols** list and click **Add** to move it to the **Selected Hanging Protocols** list. Continue to do this until all desired hanging protocols have been selected.
6. Click **Move Up** or **Move Down** to rearrange the hanging protocols in the **Selected Hanging Protocols** list.
7. Click **OK**.

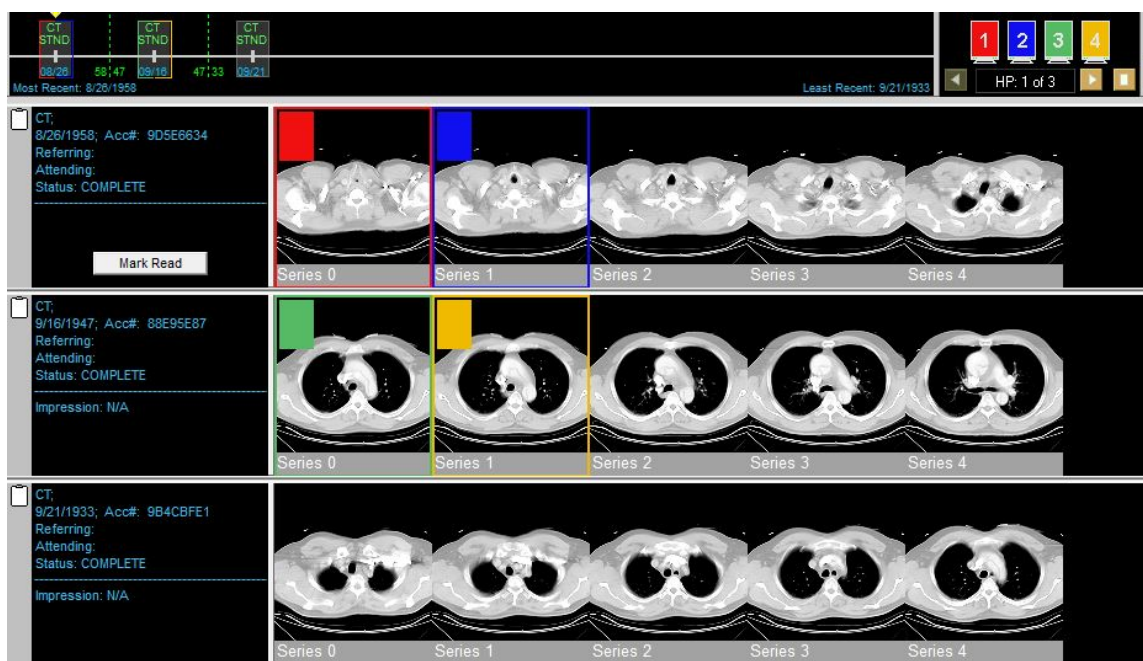
Selecting a User or System Hanging Protocol Sequence

- Right click in the Exam Margin, choose **Select User HP Sequence** or **Select System HP Sequence**, and select the desired sequence. All HP Sequences that match the selected exam's modality, modality body part, and HP group are sorted by type and alphabetically.

Compare Selected Prior Exams With Main Exams

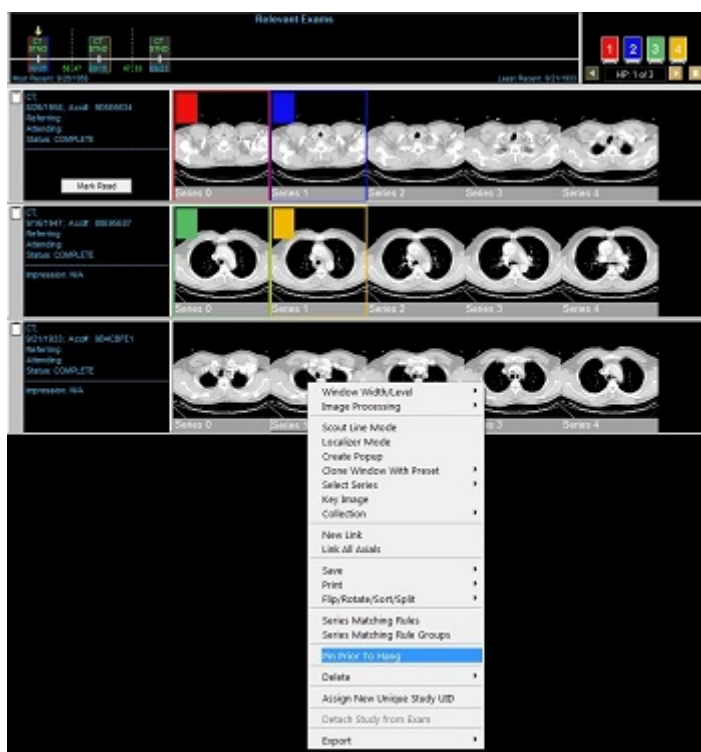
When using a hanging protocol sequence that displays images of the main exam and a prior exam, you can compare the selected prior exam (for example, prior 2 exam) with main exam by pinning a selected prior exam. in the HP sequence.

Precondition: A hanging protocol sequence that displays images of the main exam and the prior exams (prior exams is greater than 2) is selected.

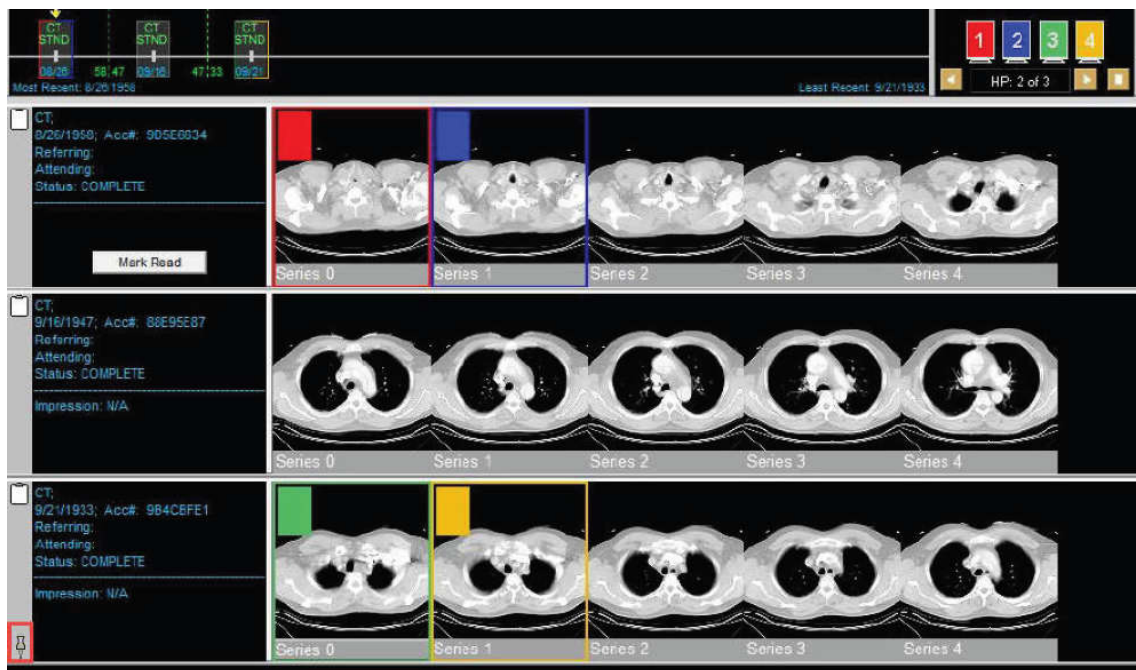


When a HP sequence is applied and if you want to hang any prior other than the hung prior do the following:

- ▶ Right click on the relevant prior and select “**Pin Prior to Hang**” from the context menu or use the configured shortcut.
- ▶ Keyboard shortcut set to “Pin Prior to Hang”



For the subsequent navigation in the hanging protocol sequence, the selected prior will be hung in place of the prior configured in the hanging protocol. A "Pin Prior Exam" icon will be displayed in the **Exam Margin** of the Pin Prior exams. A tool-tip **Pin Prior Exam** will be displayed when you move the mouse over the icon.



19 Managing Studies and Images

Overview

The following tasks apply to managing studies and images in IntelliSpace PACS:

- [“Resolving Duplicate UUIDs” on page 411](#)
- [“Resolving Cases Where Multiple Patients’ Studies are Merged into a Single Study” on page 414](#)
- [“Searching for Study Instance UUIDs” on page 416](#)
- [“Deleting Studies and Images” on page 417](#)
- [“Using Statistics and Running Reports in IntelliSpace PACS Radiology” on page 419](#)

Resolving Duplicate UUIDs

The DICOM standard prohibits assignment of a given Study UUID to more than one study; however, duplicate UUIDs can unfortunately still occur. The following tools enable you to resolve problems related to duplicate UUIDs.

- [“Removing the Demographics Mismatch Warning” on page 411](#)
- [“Manually Assigning New Unique Study Instance UUIDs” on page 412](#)
- [“Deleting Studies and Images” on page 417](#)

Two detection levels for duplicate UUIDs are supported:

- Level 1: Duplicate if the image’s Patient ID is different from the reference image’s Patient ID and either the Patients Name or the Patients Birth Date are different.
- Level 2: Duplicate if the image’s Patient ID is different from the reference image’s Patient ID.



WARNING

Deleting studies is permanent, meaning that deleted studies cannot be recovered. Deleted images can be recovered. However, all presentation states, measurements, and annotations are lost. Also, if an image has been deleted after receiving a new Study UUID, the image cannot be recovered. Be aware that deleted images may contain data that would render a different diagnosis.

Removing the Demographics Mismatch Warning

Users with administration privileges can permanently resolve the DUP UUID warning message; users without these privileges can hide the warning message but still view the images.

1. Open the study in the Exam Rack.
2. Right-click on the image and do one of the following:
 - To permanently turn the “Demographics Mismatch Caution” warning off, right-click and select **Remove Demographic Mismatch**.
 - To temporarily turn the “Demographics Mismatch Caution” warning off, right-click and select **Hide Demographic Mismatch Warning**. This only hides the warning message. The study is still considered a DUP UUID; this option is only available if there are multiple demographics associated with the study.

Manually Assigning New Unique Study Instance UUIDs

In order to manually assign a New Unique Study Instance UUID, the following conditions must be met:

- You have been assigned the “Images: Resolve Duplicate UUID Images” task
- The exam status is anything but Scheduled.
- All images of the study are available at a single location (i.e. merge condition where images spread across multiple nodes does not exist)

You can manually assign a new, unique Study Instance UUID to:

- One image (window that contains single image)
- One series (window that contain series with multiple images)
- Multiple windows (multiple single images/series) in the rack (selected with Shift-click)

IntelliSpace PACS audits each time a new Study Instance UUID is assigned to an image or group of images.



WARNING

Users with appropriate permissions should not assign new Study Instance UUIDs to studies that have not been confirmed to be complete (status is not designated “Complete”).

NOTE

You cannot assign a new Study Instance UUID to exams with anonymous patient information. See [“Making Patient Information Anonymous” on page 74](#).

In the following example, the CT Study of Patient: Eric Bowers also contains images of Patient: Eric Smith.

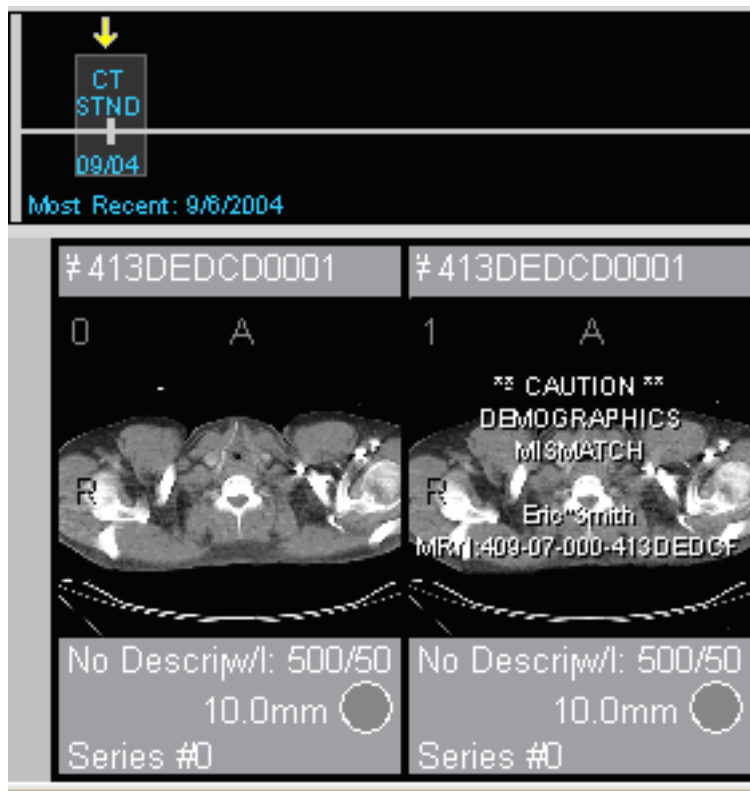


Fig. 58: DUP UID example

1. Use the **Exceptions Lookup** to find the images that are flagged as DUP UID images.
2. Open the exam that contains the images that are flagged as DUP UID images. These images are displayed with a “Demographics Mismatch Caution” message on top of the image.
3. Verify the **Study Description** and **Selected Series/Image(s)** information.
4. Review the exam to make sure it is a true DUP UID case.
 - If the exam is not a true DUP UID, and you have administrator privileges, right-click the image and select **Remove Demographic Mismatch** from the menu. This permanently turns off the warning.
 - If the exam is not a true DUP UID, and you do not have administrator privileges, right-click the image and select **Hide Demographic Mismatch Warning** from the menu. This hides the warning, but the warning will persist for other users until the PACS Administrator resolves the DUP UID case.
5. If it is a DUP UID case, right-click the image and from the menu, select **Assign New Unique Study UID**. The **Assign New Study UID** dialog box displays, allowing you to verify the images you have selected and enter a reason for the assignment. (Note that this option is not available if all image windows in an exam are selected, because you cannot delete all image windows in an exam.)
6. Enter the **Reason** you want to create a new Study Instance UID (for example, “Images belong to a different patient”).

7. Click **OK**. The Study Instance UID of the selected images are updated and the exam is rehung. A message displays while this occurs. Note that the total number of images is not updated after a new Study UID is assigned.
8. Verify that the images have not become an exception study.

NOTE

The images that have been assigned a new Study Instance UID are re-registered. Therefore, the DICOM metadata key fields are used to validate the images against an existing patient and exam. If the images cannot be validated, the new study becomes an exception.

Resolving Cases Where Multiple Patients' Studies are Merged into a Single Study

In cases where multiple patient's images have been merged into a single study, the Demographics Mismatch Caution message does not display, because all the images in the exam have the same patient demographics.

You can use the **Split Exam** feature to temporarily split a series according to specific DICOM tags to assign a new Study Instance UID.

In the following example, a CR CHEST image accidentally ended up in a CR ANKLE study.

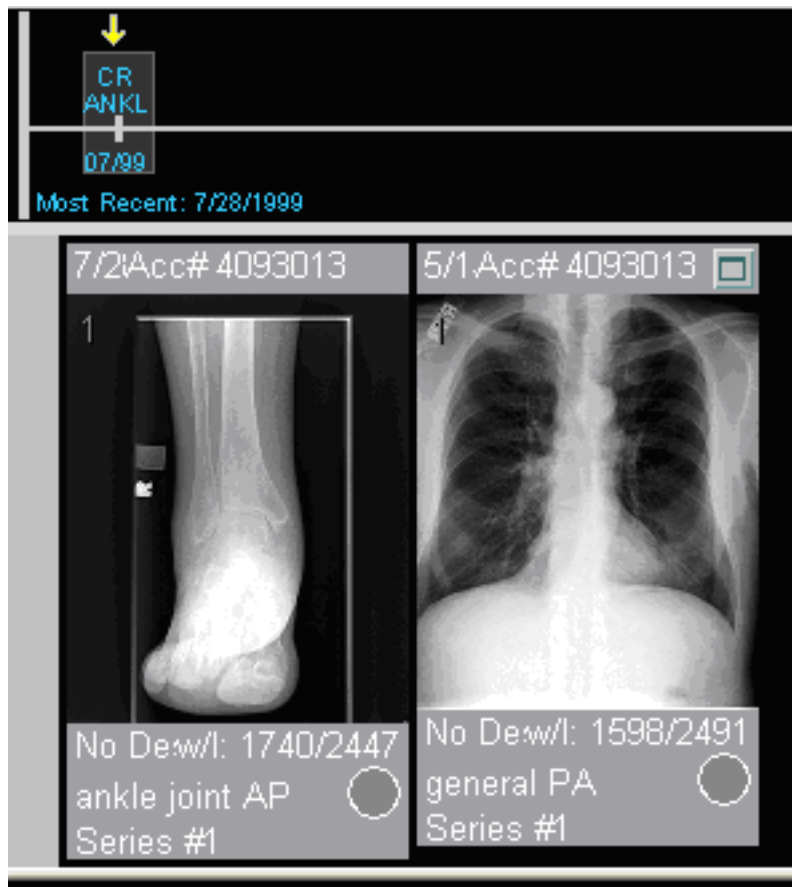


Fig. 59: DUP UID merge example

1. Use the **Patient Lookup** or **Exam Lookup** to find the exam that requires study management.
2. Open the exam and identify the series/images that belong to a different patient study. Note that the DUP UID Mismatch Caution message does not display on the image, because all the patient demographics of all images in this exam are the same. You can only determine that images belong to a different patient study by being familiar with the patient study and by reviewing the images themselves.
3. Select the series that belong to a different patient study by highlighting the image series or selecting multiple image series using the Shift key.
4. Right click and select **Assign New Unique Study UID** from the menu.
5. Enter the **Reason** you want to assign the new Study Instance UID.
6. Click **OK**. One of the following occurs:
 - Study stays in the same exam rack. This may occur if the MRN and Accession Number match the current exam.
 - Study moves to a different exam rack. This may occur if the MRN and Accession Number match a different exam.
 - Study becomes an Exception. This may occur if the MRN and/or Accession Number do not match an existing exam.

7. The image is still displayed in the same Exam Rack because, besides the new unique Study Instance UID, the image still has the same patient and exam demographics.
8. Right-click the image and select **Detach Study from Exam** from the menu. The study will become an exception in the **Exceptions Lookup**. Use the **Exceptions Handler** to resolve the exception. See [“Using the Exceptions Handler” on page 175](#).

Searching for Study Instance UIDs

When IntelliSpace PACS encounters DICOM processing errors, an email is sent from the IntelliSpace PACS server to the designated IntelliSpace PACS System Administrator. This email can be sent to multiple email recipients if there is more than one IntelliSpace PACS Administrator. The email indicates the following study information, if provided:

- Study Date/Time
- Accession Number
- Study UID
- Series UID
- Image UID
- Missing/Invalid DICOM Tag(s)

If any of the UIDs or Tags is invalid per the DICOM standard, the email indicates this next to the invalid value. This information is useful for IntelliSpace PACS System Administrators to perform baseline troubleshooting by deducing if the study presentation could affect patient care adversely.

IntelliSpace PACS Administrators equipped with the Study UID can then utilize the **Study Lookup** to search the IntelliSpace PACS system for the study. This feature is designed specifically for IntelliSpace PACS System Administrators who receive email notifications about specific DICOM studies which need to be followed up on, such as in DICOM processing errors or DUP UID scenarios. The emails do not contain any patient information. With **Study Lookup**, IntelliSpace PACS System Administrators can look up and open a study using just the Study UID provided in the email notification.

The Folder List includes the **Study Lookup** option that you can use to search for and open a study using the Study UID (SUID) number. IntelliSpace PACS displays the following search result information for the study:

- Patient name
 - Patient ID
 - Accession number
 - Modality
 - Body Part
1. In the Folder List, click **Study Lookup**.
 2. Type in (or paste) the SUID.
 3. Click **Search**. The study information displays if found. Otherwise, an error message displays.

4. Click **Open** to view the study on the Canvas Page. The Canvas Page displays the study.
5. The PACS Administrator can access the integrity of the study to determine if the study needs to be deleted from IntelliSpace PACS and resent from the modality.

Deleting Studies and Images

Depending on your security access rights (permissions), you can delete an entire study or a single image. When an image is deleted, IntelliSpace PACS keeps a record of the following information, which is available in the Administrator Tool:

- IntelliSpace PACS User ID
- Deletion Date
- Deletion Time
- Modality
- Accession #
- MRN
- Series/Image UID
- Series/Image Description/Number
- Reason for Deletion

Note the following:

- IntelliSpace PACS displays a Warning when you attempt to delete images of an exam that has already been marked read.
- IntelliSpace PACS audits each time a series or image is deleted or recovered.
- IntelliSpace PACS provides a tab in the Statistics page in the Folder List where PACS Administrators can review the audit logs.
- We strongly recommend that you use the Duplicate UID feature to delete an image, as images that are accidentally deleted using DUPUID can be recovered.

Users with the administrator privileges can recover deleted images to undo accidental deletion of images.

However, if the selected window has only a single image, is a clone, or has multi-frame image(s), you cannot delete it.

NOTE

You cannot delete images in exams with anonymous patient information. See [“Making Patient Information Anonymous” on page 74](#).

**WARNING**

Deleting studies is permanent, meaning that deleted studies cannot be recovered. Deleted images can be recovered. However, all presentation states, measurements, and annotations are lost. Also, if an image has been deleted after receiving a new Study UID, the image cannot be recovered. Be aware that deleted images may contain data that would render a different diagnosis.

1. On the Canvas Page, right-click on an image, and from the menu select one of the following options:
 - **Delete All Image(s)**: Removes every image from a selected series
 - **Delete Image**: Removes only the current image
2. If the exam being viewed has not been read, the **Reason for Deletion** dialog box displays. If the exam has been marked as read, a confirmation message displays before the image is deleted. When you click **Yes** in the confirmation message, the **Reason for Deletion** dialog box displays.
3. Enter the reason for deleting the image or select a reason from the list.
4. Click **OK**. The image(s) are deleted from the selected window and from the corresponding clone window(s), if any. Note that the total number of images is not updated after images are deleted.

Recovering Deleted Images

Deleted images are marked as such in the IntelliSpace PACS database and are no longer accessible to IntelliSpace PACS users. IntelliSpace PACS does not remove the actual images from the disk, and users with the proper administration privileges can use the **Recover Deleted Images** feature to undo the accidental deletion of images. The **Recover Deleted Images** feature is available at the exam level, not at the individual series/image level.

1. Right-click in the exam margin and from the menu, select **Recover Deleted Images**. IntelliSpace PACS displays a message if recovery is successful.
2. Close and re-open the exam to view the recovered image.

Questions and Answers on Deleting Images

What happens when you delete an image, and IntelliSpace PACS receives the same image again?

The image is rejected/ignored by IntelliSpace PACS because of a duplicate Image UID.

Can you delete an image that is covered by a rectangle, or that has a clone that is covered by a rectangle in IntelliSpace PACS Radiology?

No, the **Delete** option is temporary disabled under these conditions.

What happens to a clone when I delete a series or image?

The cloned image is also deleted.

Can you delete an image of an exam after the exam has been marked read?

Yes, but IntelliSpace PACS does display a warning message: “This exam has been Marked Read. Are you sure you want to continue and delete image(s) of the selected window?”

What happens when a Radiologist loads an exam, and after the exam is opened another user deletes a few images of the opened study?

The Radiologist will not notice any change, until they close and reload the exam.

What about multiple users trying to delete images at the same time?

When an image is deleted, the second delete causes a warning message that this series/image has already been deleted by another user.

What if an exam has only one image left?

It is not possible to delete an image if it is the last image in an exam. In this case the workaround option is to detach the study from the exam, and Remove the study from the database.

What happens when you delete and then recover an image that has measurements or annotations on it?

In this case, you lose the Presentation State information of this image. Typically, images are deleted relatively quickly after they are acquired and do not contain critical annotations and measurements.

Using Statistics and Running Reports in IntelliSpace PACS Radiology

In IntelliSpace PACS Radiology, you can run statistics and publish billing reports.

For statistics, you can generate the following:

- Daily Usage Statistics
- Monthly Usage Statistics
- Monthly/Daily Usage Statistics in Grid View

You can generate any of the following six Billing Report Types:

- Daily
- Monthly
- Archived Exams
- Archived Studies
- Received Studies
- Viewed Studies

To view statistics and run a report, do the following:

1. In IntelliSpace PACS Radiology, click the **Statistics** folder in the **Folder List**.
2. Select the **Usage Statistics** tab (at the top of the right pane) if it is not already displayed.



3. In the **Study Statistics** section, click the **Report Type** dropdown arrow, and select the type of report you want to generate:
 - Daily
 - Monthly
 - Archived Exams
 - Archived Studies
 - Received Studies
 - Viewed Studies
4. Click the **Date** dropdown arrows and select the date that you wish to query.
5. When you have made your selections, click **Query**.
6. If there is matching data for the selected date, the results are displayed in Grid view, and the **Select Columns** button is enabled. In addition, the **Download Report** link is enabled.

Usage Statistics | **Audit by User** | **Audit by Patient** | **iExport Statistics** | **iExport Summary** | **Deleted Images**

Study Statistics

Report Type: Date:

Page 1 of 2

modality	received Studies	viewed Studies (ISE)	aeTitle
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE
CR	1	0	AGFAARCHIVEVA2

- If there is no matching data for the selected date, an error message displays: **No data exists for the specified Report Type and Date.**

Usage Statistics | **Audit by User** | **Audit by Patient** | **iExport Statistics** | **iExport Summary** | **Deleted Images**

Study Statistics

Report Type: Date:

No data exists for the specified Report Type and Date.

- Click **Download Report** to open or save the report file.
- In the **File Download** dialog box, click **Open** to view the file or click **Save** to save the file as a tab-delimited matching text file.

[illegible]

Selecting Columns for Statistics Grid View

Once you have run a successful query, the **Select Columns** button is enabled in the Study Statistics section of the Usage Statistics tab.

In this view you can select the output columns that you want visible in grid view.

The Select Columns options are:

- modality
- Station
- received Studies
- received Images
- StudySize (MB)
- viewed Studies
- archived Studies
- viewed Studies (ISR)
- received Exams
- archived Exams
- Viewed Exams (ISR)
- isPrior
- manufacturer
- IPAddress
- AETitle
- institution

- department
 - model
 - ProcessorLocationName
 - OrganizationID
1. To select the output criteria, select the appropriate check boxes and then click **OK**.
The selected criteria appear in the header of the output in Grid View.

Page 1 of 2			
<u>modality</u>	<u>received Studies</u>	<u>viewed Studies (ISE)</u>	<u>aeTitle</u>
CR	1	0	DCMSUITE
CR	1	0	DCMSUITE

20 Using Advanced Mammography Features

This chapter describes features and workflow procedures that are unique to Mammography. The following must be done to use these mammography specific features:

- The Advanced **Mammography Feature** option must be enabled in iSiteWeb by authorized Philips personnel only.
- The **Workflow Preferences** must be set in System Preferences [“Setting Workflow Preferences” on page 502](#).
- The “Unread Not Read by Me” and “Discussion” filters must be created in the **Add Filters** dialog, before they are available for use.

These features and workflow procedures include

- **Mammography Workflow:** [“Workflow Overview” on page 425](#)
- **“Not Read by Me” filter:** [““Not Read By Me” Filter” on page 427](#)
- **“Discussion” filter:** [““For Discussion” Filter” on page 430](#)
- **“My History” folder:** [““My History” Folder” on page 434](#)
- **Rating an exam:** [“Rating for Double-Blind Read” on page 434](#)
- **Keypad functions:** [“Keypad” on page 440](#)
- **Troubleshooting the keypad:** [“Troubleshooting the Mammography Keypad” on page 442](#)

NOTE

For information regarding hanging protocols, hanging protocol sequences, and series matching rules that are specific for mammography, see [“Mammo-specific Hanging Protocols and Series Matching Rules” on page 384](#).

Supported Image Types

IntelliSpace PACS supports storing and viewing following image types: MG including Breast Tomosynthesis, DR Breast, DX, CR, MR Breast, US Breast, SC, Mammo CAD SR, GSPS (DICOM presentation state). Other combinations of modality and body part are not supported.

Workflow Overview

Screening

If the exam description contains a specific descriptive text (tag), IntelliSpace PACS automatically labels and associates this exam with screening. The exact tag is defined during installation, and can be modified via the Preferences dialog box in IntelliSpace PACS Enterprise and IntelliSpace PACS Radiology (for details, [“Setting Workflow Preferences” on page 502](#)).

Depending on your department’s policy, your IntelliSpace PACS workstation is configured for either of the following screening workflows:

- single-read
- double-blind-read

Diagnostic Exam

If an exam is not specifically associated with screening (“Screening” on page 425), IntelliSpace PACS automatically labels and designates this exam as a diagnostic exam.

Typical Workflow

The following typical workflow applies to both screening and diagnosis in mammography.

1. Select a mammography patient and review the case. See “Selecting a Patient Case” on page 426.
2. Apply a rating. See “Rating for Double-Blind Read” on page 434.
3. Retrieve and export the studies. See “Retrieving and Exporting Studies” on page 341.
4. Reporting: to be carried out according to your department policy (for example: in RIS or HIS).

Selecting a Patient Case

NOTE

Before creating the filters and using workflow specific to mammography, the Advanced Mammography Feature option must be enabled.

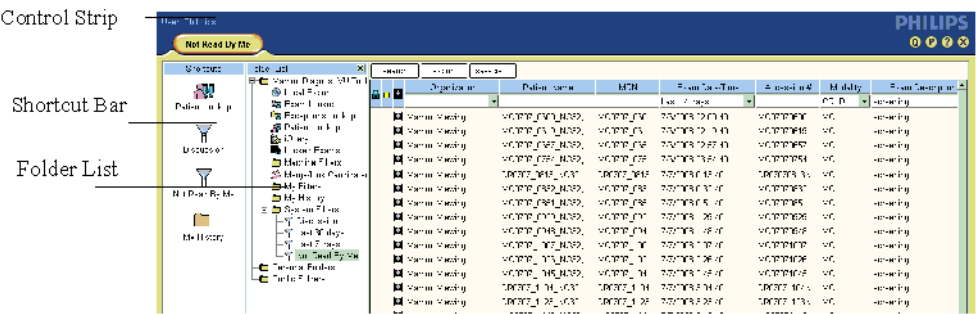


Fig. 60: IntelliSpace PACS Program Layout

1. Click to select one of the shortcuts. Depending on your system settings, other shortcuts may be available, such as specific filters and folders for the diagnostic workflow. The following are some examples:
 - Patient Lookup (“Patient Lookup Overview” on page 81)

- **Not Read By Me** filter ([““Not Read By Me” Filter” on page 427](#))
 - **For Discussion** filter ([““For Discussion” Filter” on page 430](#))
 - **My History** folder ([““My History” Folder” on page 434](#))
2. The specified worklist is displayed.
 3. If required, specify additional criteria to further refine your search; click **Search** to apply the criteria.
 4. To open a patient examination, double-click the corresponding entry in the worklist.
 5. The Canvas Page is displayed on the navigation monitor, replacing the worklist. Clinical images are displayed on the other monitors.
 6. In a filter worklist, use the keypad to navigate through the exams: **Next Exam** and **Previous Exam**.



“Not Read By Me” Filter

NOTE

Before creating and using the “Not Read by Me” filter, the Advanced Mammography Feature option must be enabled.

Not Read By Me is a system filter that selects all mammography exams that have not yet been read by the current user. This filter creates a personal to-do list. You must first create this filter and then it will appear in the System Filters folder under Radiology Tools in the Folder List.

NOTE

You can also create the Not Read By Me filter as a user filter, by right-clicking the My Filters folder in the folder list. The filter is then available to you on any machine that you are logged in to.

To Create the Not Read By Me Filter

1. Right-click **System Filters** in the Folder List and select **Create Filter**. The **Add Filter** dialog displays.
2. Complete the fields as follows:
 - **Name:** Type **Not Read By Me**

- **Description:** Type **unread mammos**
 - **Exam Worklist:** make sure box is checked
 - **Exam Date:** select the date or date range from the dropdown list
3. In the **General Criteria** tab, select **Modality** and click the -> arrow to move it to the **Filter On** field.
 4. In the **Criteria:** field, **Modality** should be displayed.
 5. Select **MG** in the **Equals:** dropdown list and then click **Update Criteria**.
 6. In the Filter Summary, **Modality** should display in the **CriteriaName** column and **MG** should be listed in the **Equals** column.

Filter Summary

CriteriaName	Equals	Does Not Equal
Modality	MG	

Buttons: Update Criteria, Remove Criteria

7. Click the **Exam Worklist Criteria** to load the Available Filter Criteria.

General Criteria | **Exam Worklist Criteria** | Exception Worklist Criteria

Available Filter Criteria:

- Exam Code
- Exam Description
- Exam Status
- Final Result
- Has Notes
- Ordering Location
- Patient Age
- Priority
- Provider(s)
- Read Status**
- Sub Specialty

Filter On:

- Has Images
- Mark Read**

Criteria: Mark Read

Equals: Unread by Me

Does Not Equal:

Buttons: Update Criteria, Remove Criteria

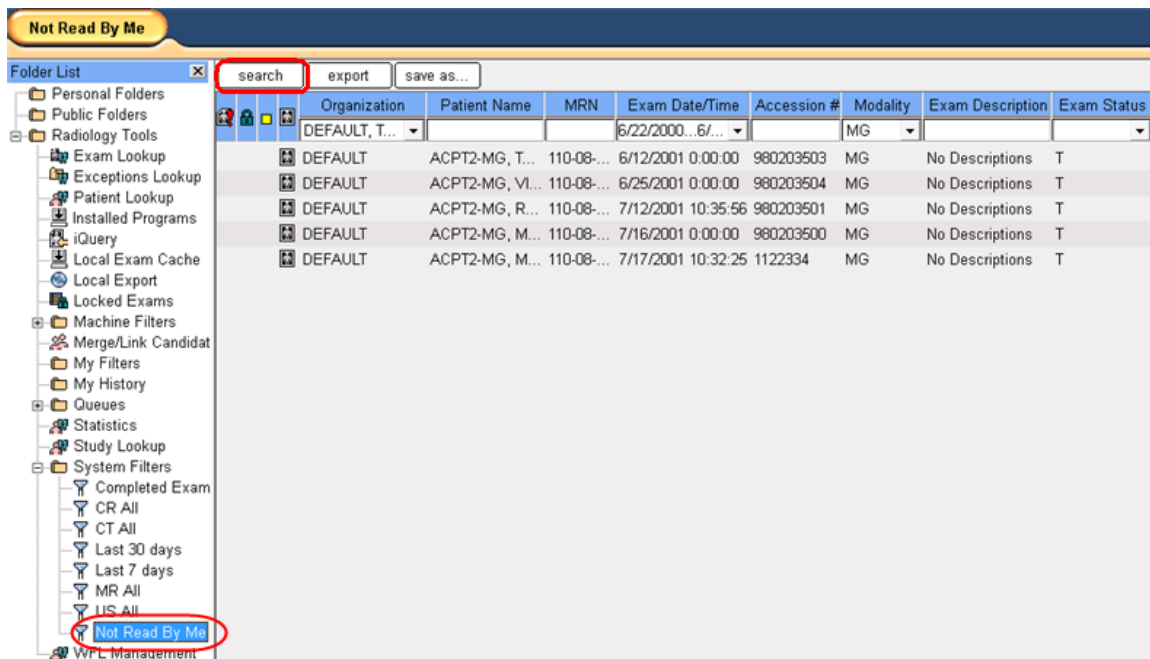
Filter Summary

CriteriaName	Equals	Does Not Equal
Has Images	With Images	
Mark Read	Unread by Me	

CriteriaName	Contains	Does not contain
Has Images	With Images	
Read Status	D-For Discussion	

8. In the Available Filter Criteria, select **Has Images** and click the -> arrow to move it to the **Filter On** field.
9. The **Criteria:** field should display **Has Images**. In the **Equals:** dropdown list, select **With Images** and then click **Update Criteria**.
10. From the Available Filter Criteria, select **Mark Read** and click the -> arrow to move it to the **Filter On** field.
11. **Mark Read** should display in the **Criteria:** field. In the **Equals:** dropdown list, select **Unread by Me** and then click **Update Criteria**.
12. In the **Filter Summary**, the two selected criteria – Has Images and Mark Read – should be displayed with their respective parameters, With Images and Unread by Me.
13. Click **Save** when you are done. The **Add Filter** dialog is closed and the **Not Read By Me** filter displays under **System Filters** in the Folder List.

You can specify additional search criteria to further refine the selection by selecting the filter in the Folder List and modifying the search fields displayed in the right pane. Click **Search** to display a list of patients.



If not already present, you can display the following columns in the search list:

- **Reader 1:** Name of the first reader in screening
- **Reader 2:** Name of the second reader in screening
 - Second reader in double-blind-read workflow
- **Reader 3:** Name of the third reader in screening
 - Not applicable for single-read workflow
 - Final result in double-blind-read workflow
- **Final result:** Final rating based either on a consensus of the first and second readers, or on the decision of the final reader.

To display additional columns, right-click any column heading and select them from the list.

“For Discussion” Filter

NOTE

Before creating and using the “For Discussion” filter, the Advanced Mammography Feature option must be enabled.

For Discussion is a system filter for the screening workflow. It selects all exams where there has been a difference of opinion between the first and second readers, or when at least one opinion was “Undecided”. This filter creates a to-do list for the third reader in a double-blind read workflow. You must first create this filter and then it will appear in the System Filters folder under Radiology Tools in the Folder List.

To Create the For Discussion Filter

1. Right-click **System Filters** in the Folder List and select **Create Filter**. The **Add Filter** dialog displays.

Add Filter

Name: For Discussion Description: for difference of opinion between 1st and 2nd readers, or Undecided

☒ Exam Worklist Exam Worklist Columns... ☐ Exception Worklist Exception Worklist Columns...

Exam Date: Last 90 days Exception Date: Last 24 hours

General Criteria | Exam Worklist Criteria | Exception Worklist Criteria

Available Filter Criteria: Body Part, Organization, Performing Resource

Filter On: Modality

Criteria: Modality

Contains: MG Does not contain:

Update Criteria Remove Criteria

Filter Summary

CriteriaName	Contains	Does not contain
Modality	MG	

Save Cancel

2. Complete the fields as follows:
 - **Name:** Type **For Discussion**
 - **Description:** Type a description
 - **Exam Worklist:** make sure box is checked
 - **Exam Date:** select **Last 90 days** from the dropdown list
3. In the **General Criteria** tab, select **Modality** and click the -> arrow to move it to the **Filter On** field.
4. In the **Criteria:** field, **Modality** should be displayed.
5. Select **MG** in the **Equals:** dropdown list and then click **Update Criteria**.
6. In the Filter Summary, **Modality** should display in the **CriteriaName** column and **MG** should be listed in the **Contains** column.
7. Click the **Exam Worklist Criteria** to load the Available Filter Criteria.

General Criteria **Exam Worklist Criteria** Exception Worklist Criteria

Available Filter Criteria

- Exam Status
- Final Result
- Has Notes
- Mark Read
- Ordering Location
- Patient Age
- Priority
- Provider(s)
- Sub Specialty

Filter On

- Has Images
- Read Status

Criteria: Read Status

Contains: D-For Discussion

Does not Contain:

Update Criteria Remove Criteria

Filter Summary

CriteriaName	Contains	Does not contain
Has Images	With Images	
Read Status	D-For Discussion	

General Criteria **Exam Worklist Criteria** Exception Worklist Criteria

Available Filter Criteria

- Exam Status
- Final Result
- Has Notes
- Mark Read
- Ordering Location
- Patient Age
- Priority
- Provider(s)
- Sub Specialty

Filter On

- Has Images
- Read Status

Criteria: Read Status

Equals: D-For Discussion

Does Not Equal:

Update Criteria Remove Criteria

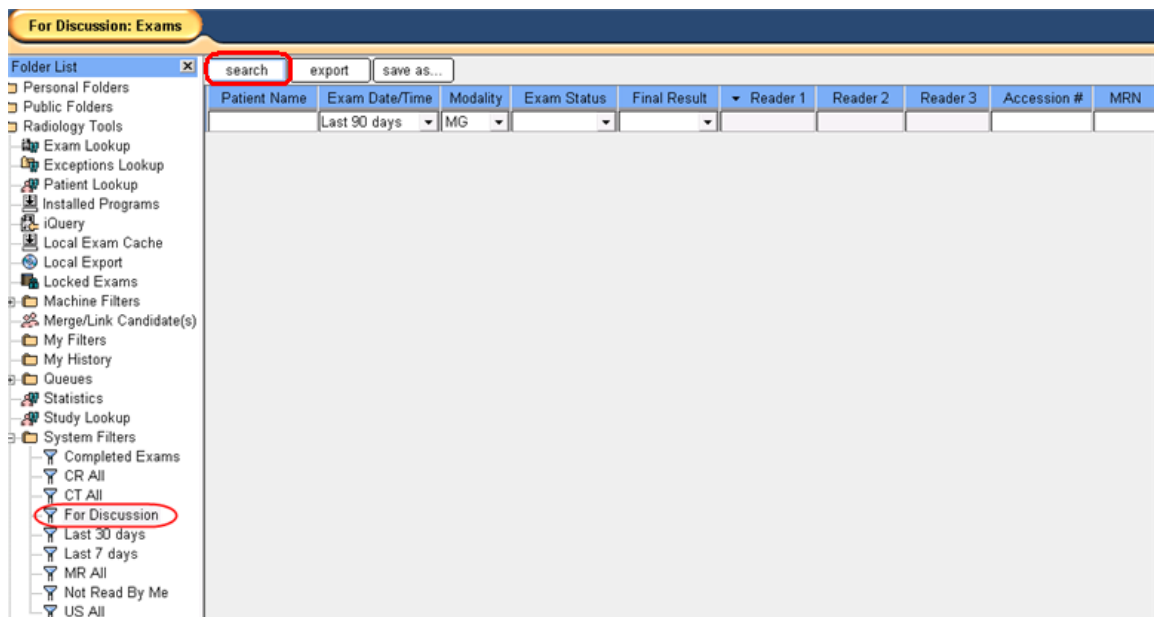
Filter Summary

CriteriaName	Equals	Does Not Equal
Has Images	With Images	
Read Status	D-For Discussion	

8. In the Available Filter Criteria, select **Has Images** and click the -> arrow to move it to the **Filter On** field.
9. The **Criteria:** field should display **Has Images**. In the **Equals:** dropdown list, select **With Images** and then click **Update Criteria**.
10. From the Available Filter Criteria, select **Read Status** and click the -> arrow to move it to the **Filter On** field.
11. **Read Status** should display in the **Criteria:** field. In the **Equals:** dropdown list, select **D-For Discussion** and then click **Update Criteria**.

12. In the **Filter Summary**, the two selected criteria – Has Images and Read Status – should be displayed with their respective parameters, With Images and D-For Discussion.
13. Click **Exam Worklist Columns...** in the Add Filter dialog. The **Exam Worklist Columns** dialog displays. In addition to the fields displayed by default, add the following fields to the right pane (select each one in the **Available Fields** pane and then click **Add->**):
 - **Mark Read**
 - **Final Result**
 - **Reader 1**
 - **Reader 2**
 - **Reader 3**
14. Make sure **Modality** has been added; it may already be added by default.
15. To change the order of each field (column), select it in the right pane and then use the **Move Up / Move Down** buttons to position the fields in the desired order.
16. When you are finished, click **OK**.
17. In the Add Filter dialog, click **Save**. The **Add Filter** dialog is closed and the **For Discussion** filter displays under **System Filters** in the Folder List.

You can specify additional search criteria to further refine the selection by selecting the filter in the Folder List and modifying the search fields displayed in the right pane. Click **Search** to display a list of patients.



If not already present, you can display the following columns in the list:

- **Reader 1:** Name of the first reader in screening
- **Reader 2:** Name of the second reader in screening
 - Second reader in double-blind-read workflow
- **Reader 3:** Name of the third reader in screening

- Not applicable for single-read workflow
- Final result in double-blind-read workflow
- **Final result:** Final rating based either on a consensus of the first and second readers, or on the decision of the final reader.

To display additional columns, right-click any column heading and select from the list.

“My History” Folder

My History is a folder in the folder list that contains the last 100 exams that you have viewed.

Use this folder to:

- Access and review your recently rated studies
- Open recently rated studies for which you want to correct any erroneous screening results (only available before the exam rating is finalized)

Rating for Double-Blind Read

Screening: Marking an Exam as Positive, Negative, or Undecided



WARNING

Do not use screening ratings for administrative or clinical purposes.

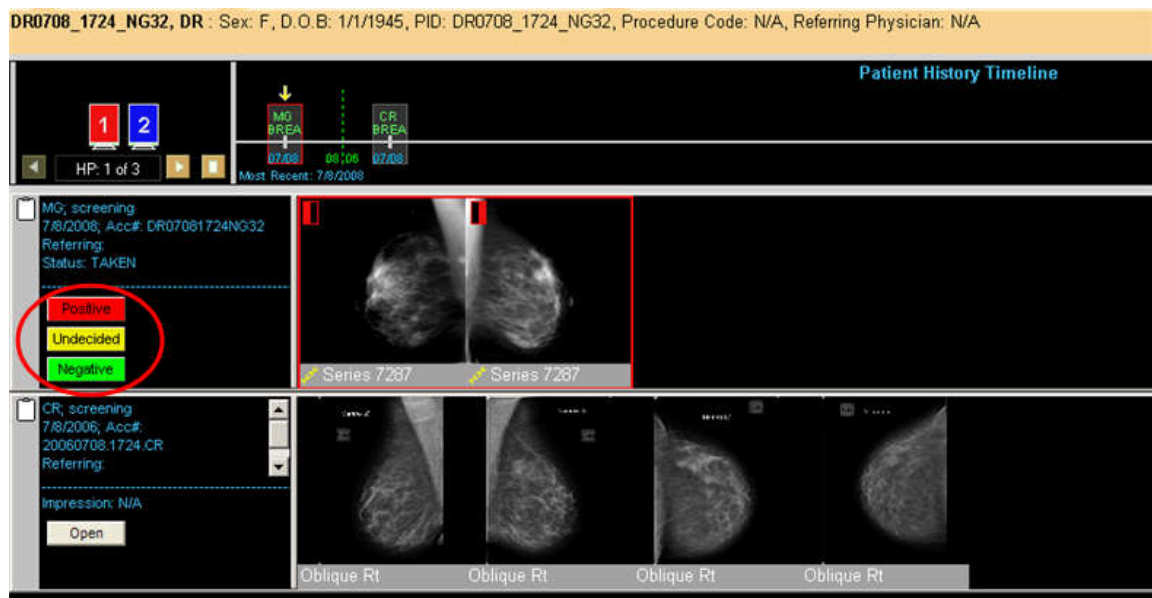


Fig. 61: View of the Canvas Page showing the Rating buttons

When you have finished reading an unread exam, you should submit your rating. Exams destined for screening display dedicated rating buttons in the Exam Info area of the Canvas Page: **Positive**, **Negative**, and **Undecided**.

You can also use the keypad buttons to submit your rating.

Keypad Buttons	Description
	Positive rating
	Negative rating
	Undecided

Do one of the following:

- ▶ Use the keypad to submit your rating.
- ▶ Click one of the buttons on the Exam Info part of the Canvas Page.

After you have rated the exam:

- A presentation state containing measurements and annotations is automatically created and exported to the default archiving system (for example, a PACS), if the User Preference “Automatically save presentation state after mark read” is selected.
- IntelliSpace PACS automatically loads the next exam in your worklist, if the User Preference “Automatically open next unread exam from active filter” is selected.

Diagnosis: Marking an Exam as Read

When you have finished reading an unread exam, you should mark that exam as “read.” Unread exams display the **Mark Read** button in the Exam Info area of the Canvas Page. If the System Administrator has set this preference, you can mark an exam as read multiple times until the status of the exam is **Finalized**.

Do one of the following:

- ▶ Press the keypad button **Mark Read**.



- ▶ Click **Mark Read** on the Exam Info part of the Canvas Page.
- ▶ Press **F3**.

After you have rated the exam:

- A presentation state containing measurements and annotations is automatically created and exported to the default archiving system (for example, a PACS system), if the User Preference “Automatically save presentation state after mark read” is selected.

- IntelliSpace PACS automatically loads the next exam in your worklist, if the User Preference “Automatically open next unread exam from active filter” is selected.

Reviewing and Correcting Your Ratings

You can view your ratings and decisions in the **My History** folder.

In this folder, you can:

- access and review your recently rated studies
- open recently rated studies for which you want to correct any erroneous screening results (only available before the exam rating is finalized)

Tomosynthesis Slice Indicator

The Tomosynthesis Slice indicator shows the orientation and the direction of scrolling when viewing the Tomo series. The Tomosynthesis Slice Indicator is available with the Tomosynthesis stacks and indicates:

- Current slice number
- First and last slice numbers
- Orientation of the anatomy (example, H and F, L and M) is displayed along the indicator
- Displays M – L or H – F, First and Last slice number and slice displayed

NOTE

A keyboard shortcut can be configured to Show/Hide the Tomosynthesis Slice Indicator.

- For C View/Tomo (3D) series combinations, both the series must be present in the study.
- C View/Tomo (3D) series must have same frame of reference and same dimensions in order to activate this option.

NOTE

- The context menu is available only for a Mammo C View image, loaded on diagnostic monitor, with the corresponding Tomo Stack (3D) series.

When using the tool to view an exam, a “Crosshairs (+)” mouse cursor indicates the movements in the C View series and if a corresponding Tomo Stack 3D series is open on the monitor, then a “Circle” identifier cursor will be shown to mark the area selected in the C View series; the movements in C View and Tomo series are synchronized.

NOTE

- You can localize only when C View and Tomo (3D) series are “stacked” or displayed side-by-side.
 - You can localize on more than one C View/3D combination, but will require activation of the Localizer tool on new combination.
3. Left click on the crosshairs icon to lock the Tomo Localizer Mode in the C View image. A circle is populated navigating to the relevant slice on the Tomo (3D) Image. This enables you to resize the corresponding area in the Tomo (3D) image for close examination.

NOTE

The Localizer crosshairs and circle are not saved in a Presentation State.

4. Left click on the “Crosshairs” icon to unlock the Tomo Localizer Mode.
5. Exit Localization by one of these operations:
 - Right click on the “Crosshairs” and select **Exit** in the context menu to exit the Tomo Localizer Mode.
 - Right click on circle surrounding localized area and select exit
 - Toggle localization mode off with the configured shortcut key
 - Toggle Localization mode off by selecting “Localizer” option from Right Click Menu

NOTE

- Tomo Localizer tools (crosshairs and circle) is only for viewing purpose and cannot be saved as part of the presentation state
- Tomo Localizer Mode is available only on diagnostic monitor and is not available in multi-image mode and on windows such as, Thumbnail, Clone, Popup, Collection and Key-Image.
- Tomo Localizer tools (crosshairs and circle) is available for the C View and Tomo Images received from Hologic.

C View to Tomo (3D) localization

- When localization is activated, Crosshairs can be placed anywhere on the synthetic C View series
- Arrow to C View series (if needed) – the localized area is circled and the image where the density is seen is displayed
- User can scroll forward/backward to display “best” slice. When scrolling circle persists.
- “Circle” disappears from view during cine, but reappears when cine is paused.
- User can hold and move the “Circle” to another location and crosshairs will follow the circle
- User can hold and enlarge the “Circle” (same as enlarging a circle annotation)
- User can hold and move the crosshairs on the C View to localize on another area without exiting localization mode.

Tomo (3D) to C View localization

- Can be useful when a suspicious area is seen on Tomo series only
- When activated, user can place crosshairs on any image in the Tomo (3D) series
- “Circle” will display in the same area on C View series

Tomo Slab View

Slabs can be created out of the Tomo stack on the fly via the context menu and keyboard shortcut.

Tomo images are usually acquired at 1mm thickness.

- Slab view can be activated using the short-cut key or from the right click menu when on the Tomo series. Slab View can be used when determining if calcifications are clustered or scattered throughout the Breast.
- The initial slab view is created based on the “ **Default Frames**” set in “ **Tomo Slab View**” under **User Preferences--> Display Preference**.
- Slab thickness displays on the Tomo Slice Indicator.
- Slab thickness can be adjusted on the fly by holding the mouse wheel and moving side-to-side (custom scrolling using the mouse wheel is disabled when in slab mode.)

NOTICE

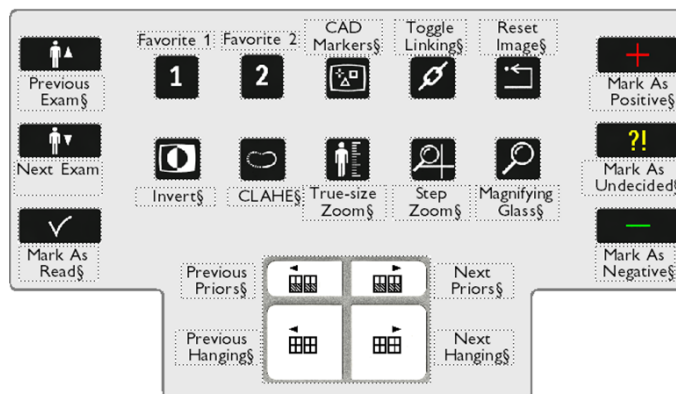
Based on this value, when the user scrolls through the slices, the slabs will be displayed in a overlapped manner.

For example if the value is set to 4 Frames, then the display of the slabs will be as follows: Slab 1: 1-4 Frames, Slab 2: 2-5 Frames, Slab 3: 3-6 Frames.

- Play Cine mode is disabled, primarily for performance reasons (a LOT of data being combined in slabs), but since there are fewer slices, less scrolling is needed.
- Home/End keys will quickly take user to first and last slab.
- Can localize when in slab mode, but C View to Tomo (3D) localization will only display the circle in the appropriate area and NOT attempt to display the appropriate slice in the Tomo (3D) series.
- Exit using the short-cut toggle key or re-selecting Tomo Slab mode from right click menu.
- Slab mode can also be exited when user moves to another HP in the sequence.

Keypad

The keypad is placed next to the keyboard, and offers a quick method for launching frequently used functions. Following is an overview of the keypad buttons and their functions.



See [“Troubleshooting the Mammography Keypad” on page 442](#) for information on how to resolve issues before calling Technical Support.

You can designate the functions for Favorite 1 and Favorite 2 in the User Preferences dialog. See [“Setting Mammography Keypad Settings” on page 457](#).

The options for both keys are:

- Next Hanging
- Previous Hanging
- Next Exam on Worklist Filter
- Previous Exam on Worklist Filter
- Mark as Read

- Show/Hide Image Overlays
- Step-Zoom Step
- Reset Image Display
- Invert Grayscale
- Link/Unlink images
- Mirror Link
- Toggle True Size Zoom
- Previous Image
- Next Image
- Cine
- User Tool Palette
- Arrow Annotation
- Text Annotation
- Spine Labeling Annotation
- Rotate 90 CW
- Help Manual
- Worklist / Canvas Page Refresh
- Magnifying Glass
- Toggle Cine Mode
- Go to Beginning of Stack
- Go to End of Stack
- Toggle Key Image
- Toggle Pixel-to-Pixel Zoom
- Show/Hide Bit Overlays
- Show/Hide Shutter Overlays
- Show/Hide All Overlays
- Scout Line Mode
- Localizer Mode
- Vertical Rack
- Horizontal Rack
- Toggle Hanging Protocol Monitor Index
- Page Navigation Rectangle Forward
- Page Navigation Rectangle Backward
- Next Series from the Exam
- Previous Series from the Exam
- Next Prior

- Previous Prior
- Toggle SR CAD Results
- Mark as Positive
- Mark as Negative
- Mark as Undecided
- Toggle All Links
- Toggle Bounce Mode
- Previous Hanging Sequence
- Next Hanging Sequence

Troubleshooting the Mammography Keypad

Before you call Care technical support on problems with keypads that are used for IntelliSpace PACS Mammography, try the appropriate solutions below to isolate the problem.

Problem	Solution
The keypad does operate, but the buttons are not related to their functions.	1. Contact Care and ask for the ZIP file with the keypad key codes. 2. Copy the content of the ZIP file to the temp folder on the client to which the keypad is connected to. 3. Make sure that IntelliSpace PACS Radiology does not run. 4. Run the BAT file (IB-keycodes). 5. Start IntelliSpace PACS Radiology and verify that the buttons on the keypad are related to their functions now.
The keypad does operate correctly, but the background light is off.	1. Press and hold the buttons “Previous Hangings” and “Next Hangings” simultaneously. 2. Press repeatedly the button “Next Priors” to increase the light intensity until the desired intensity.

Problem	Solution
The keypad does operate correctly, but the background light is too bright.	1. Press and hold the “Previous Hangings” and “Next Hangings” buttons simultaneously. 2. Press repeatedly the button “Previous Priors” to decrease the light intensity until the desired intensity.
The keypad does not operate.	• Make sure that the keypad is connected to a free USB port on the client. • Interchange the keypad with another USB device connected to the client that does work. • Make sure that the keyboard shortcuts works on the client, e.g. press key W for the next hanging or key Q for the previous hanging. Note that the end-user can change the default keyboard shortcuts.

If none of the above gives a solution for the problem, contact Care technical support and request an exchange of the keypad.

21 Setting User Preferences

You can set preferences to customize your IntelliSpace PACS environment for your individual needs and work habits. There are three types of preferences:

- User preferences for the currently logged in user
- Systems preferences that affect every user (for IntelliSpace PACS System Administrators only) See [“Setting System Preferences” on page 471](#).
- Machine preferences for settings related to the machine on which you are currently working. See [“Setting Machine Preferences” on page 517](#).

Users can set the following preferences:

- **General Preferences:** See [“Setting General Preferences” on page 446](#)
- **Mouse Preferences:** See [“Setting Mouse Preferences” on page 452](#)
- **Window Width/Center:** See [“Setting Window Width/Center User Preferences” on page 455](#)
- **Keyboard Shortcuts:** See [“Setting Keyboard Shortcut Preferences” on page 456](#)
- **Mammography Keypad Settings:** See [“Setting Mammography Keypad Settings” on page 457](#)
- **Image Processing:** See [“Setting Image Processing Preferences” on page 458](#)
- **Display Preferences:** See [“Setting Display Preferences” on page 460](#)
- **Hanging Protocols:** See [“Setting User Hanging Protocol Sequences” on page 463](#)
- **HP Sequences:** See [“Setting User Hanging Protocol Sequences” on page 463](#)
- **Applications Configuration:** See [“Setting Applications Configuration Rules” on page 464](#)
- **Canvas Page:** See [“Setting Canvas Page Preferences” on page 465](#)
- **Measurements Configuration** See [“Setting Measurements” on page 467](#)

Only IntelliSpace PACS System Administrators can set enterprise-wide preferences as well as computer-specific and account-specific settings. You may need to be familiar with this area to assist users who are trying to set their own preferences, to answer questions about system-wide settings, and to process requests for changes to those settings. System and machine preferences are only available to System Administrators and are not visible to standard users.



WARNING

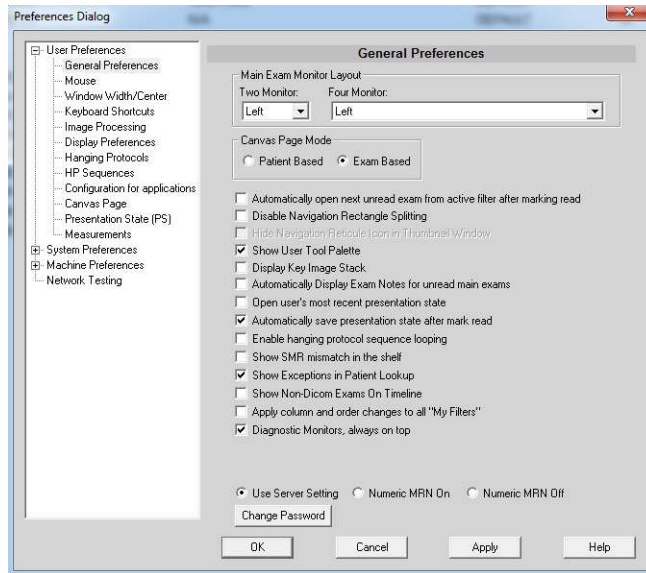
If multiple users share the same User Preferences, IntelliSpace PACS cannot prevent the users from changing settings in each of the users' User Preferences.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Set the desired user preferences.
3. Click **Apply** to save the preference and continue setting user preferences. Click **OK** when you are done.

Setting General Preferences

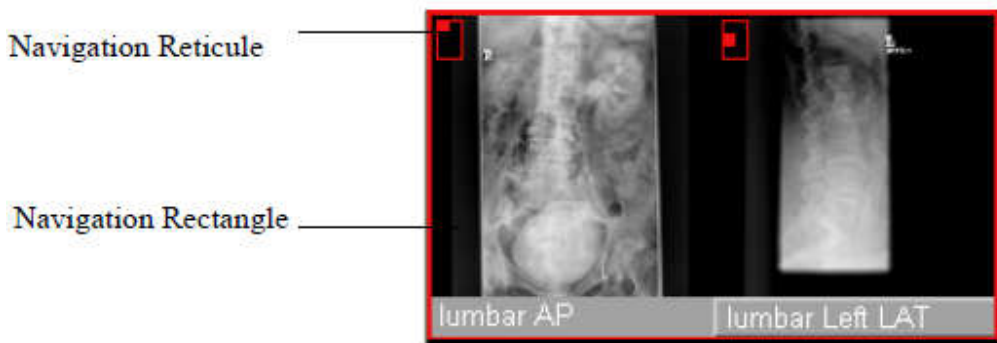
Any user can set general preferences, regardless of their privileges.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip. The right side of the **Preferences** dialog box displays the current general preferences.



2. Set the **Main Exam Monitor Layout** you want for **Two Monitor** (dual diagnostic monitor workstations) and **Four Monitor** (four diagnostic monitor workstations) settings.
 - The **Two Monitor** setting allows current exams to be displayed on the left or right monitor.
 - The **Four Monitor** setting allows current exams to be displayed on:
 - Middle, but Left if no Prior (starts Main display on 1st monitor)
 - Middle, but Right if no Prior (starts Main display on 3rd monitor)
 - Middle, but Right-to-Left if no Prior (starts Main display on 4th monitor).
 - Right To Left: This option will hang the current exams inversely to the "Left" option.
3. Set the **Canvas Page Mode** to **Patient Based** or **Exam Based**. This controls whether exams displayed in your Canvas Page are organized by patient or exam. If you select **Patient Based**, only one main exam can be open for each patient. If you select **Exam Based**, multiple exams can be open for each patient.
4. Optionally, set the following preferences. When you are done with each preference, click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.
 - Select the **Automatically open next unread exam from active filter after marking read** check box to have IntelliSpace PACS Radiology automatically open the next exam in Worklist Filters when you mark an exam as read.
 - Select the **Disable Navigation Rectangle Splitting** check box if you do not want to be able to split the **Navigation Rectangles** to display the virtual monitors.

- Select the **Hide Navigation Reticule Icon in Thumbnail Window** check box if you do not want to display the navigation rectangle icon in the thumbnail window. This icon shows where on the diagnostic monitor the series will be displayed. This check box is only active if you have selected the **Disable Navigation Rectangle Splitting** check box.

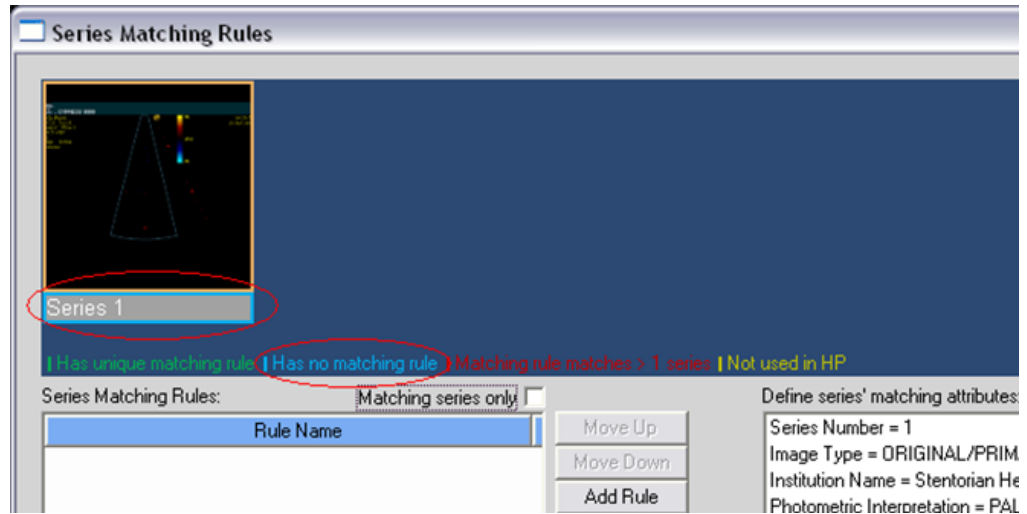


Navigation Rectangle and Navigation Reticule

- Select the **Show User Tool Palette** check box to display the **User Tool** palette automatically when you are viewing images.
- Select the **Display Key Image Stack** check box to display the Key Image Series at the beginning of each exam rack. The Key Image Stack enables you to view images in a study that have been flagged as significant. Key images are saved in Presentation States and can be flagged for a variety of reasons, including improving referring physician access by providing a way to focus on the most pertinent images in a study, teaching files, consultation, and image quality issues.
- Select the **Automatically Display Exam Notes for unread main exams** check box to have IntelliSpace PACS automatically open the **Exam Notes** for the unread “main” exam of each Canvas Page if exam notes are available and the user has proper permissions. See [“Using Exam Notes” on page 136](#).
- Select the **Apply flip/rotate from hanging protocol instead of presentation state** check box to apply flip/rotate from hanging protocol otherwise from presentation state.
- Select the **Axial/Oblique CT/PT-CT** check box to automatically display axial and oblique CTs or PT-CTs so that the anatomical right is displayed on the left, regardless of the initial orientation of the image. This setting is mostly applicable to CT's or PT-CTs of the sinuses. This check box might not be displayed if the System Administrator has disabled this option for the entire site.
- Select the **Open user's most recent presentation state** check box if you want this presentation state to be opened first.
- Select the **Automatically save presentation state after mark read** check box if you want the presentation state to be saved when the exam is marked read.
- Select **Automatically connect to federation** to activate the Federation layer in the IntelliSpace PACS client, only if Federation is configured at the site. See [“Setting Federation Status” on page 61](#).
- Select **Enable hanging protocol sequence looping**, which allows you to advance sequentially through an HP sequence. For example, if you have a Hanging Protocol Sequence containing HP1, HP2, and HP3, with the HP sequence looping option enabled, you can navigate from HP1 to HP2 to HP3 by pressing the right arrow key (>>). Once you reach HP3, you can press the right arrow again to advance to HP1, completing the loop. Without this preference enabled, you press the right arrow key to ad-

vance from HP1 to HP2 to HP3; however, once you reach the last HP in the sequence, you must press the left arrow key to navigate back down from HP3 to HP2 and then to HP1.

- Select **Show SMR mismatch in the shelf** to enable the color scheme within the Series Matching Rules dialog box. Within the SMR dialog box, the top section has a color code for the SMRs that are identified, and those SMRs that are not.



- Select **Show Exceptions in Patient Lookup** to enable searching for and displaying both exams and exceptions that match the search criteria in the Patient Lookup. (See [“Viewing Exceptions in the Patient Lookup”](#) on page 94.
- Select **Show Non-Dicom Exams On Timeline** option to show Non- DICOM exams on time line. Non-DICOM exams means JPEG and MP4 content with the modality types VL or XC ingested via the VL web application or iOS app only. By default, this option is not selected and the Non-DICOM exams are not shown on the time line. Video(MP4) thumbnails can be shown on the IntelliSpace Radiology/IntelliSpace Enterprise timeline. But they cannot be played. They can only be played on Anywhere Viewer. Whereas JPEG can be viewed within IntelliSpace Radiology/IntelliSpace Enterprise.
- Select **Apply column and order changes to all “My Filters”** to save the user’s column reordering preference across all the filters available for that user.
- The **Diagnostic Monitors, always on top** option will be selected by default. When this option is selected, the diagnostic monitors will be reserved for displaying only patient images. Any other application displayed on the diagnostic monitors will be hidden by the diagnostic monitors when IntelliSpace PACS Radiology is selected. When the Diagnostic Monitors, always on top option is not selected, the diagnostic monitors can be used for other applications until a study is opened. User can switch between these options at any time and re-login for the selected option to take effect. User can switch between these options at any time and re-login for the selected option to take effect.

NOTE

The “Apply column and order changes to all “My Filters” option is not applicable to Filters containing Exceptions

- Select **Use Server Setting** if you want the behavior to depend on the setting in the iSiteweb.
- Select either one of the options **Numeric MRN On** or **Numeric MRN Off** to override the server setting and function as per the selection.
- If desired, click **Change Password**. The **Change Password** dialog box displays. Enter the desired password changes and click **OK**.

NOTE

If your new password does not meet the password policy, then the appropriate messages display:

- “Your new password does not meet the minimum length requirement. Please contact your system administrator.”
- “Your new password does not meet the complexity requirement. Please contact your system administrator.”

1. Set the **Rack Orientation** to **Vertical** or **Horizontal** and the **Initial Size** to **Small** or **Normal**.
2. Click **Apply** to save the settings and continue setting other preferences.
3. Click **OK** to save your changes and close the **Preferences** dialog box.

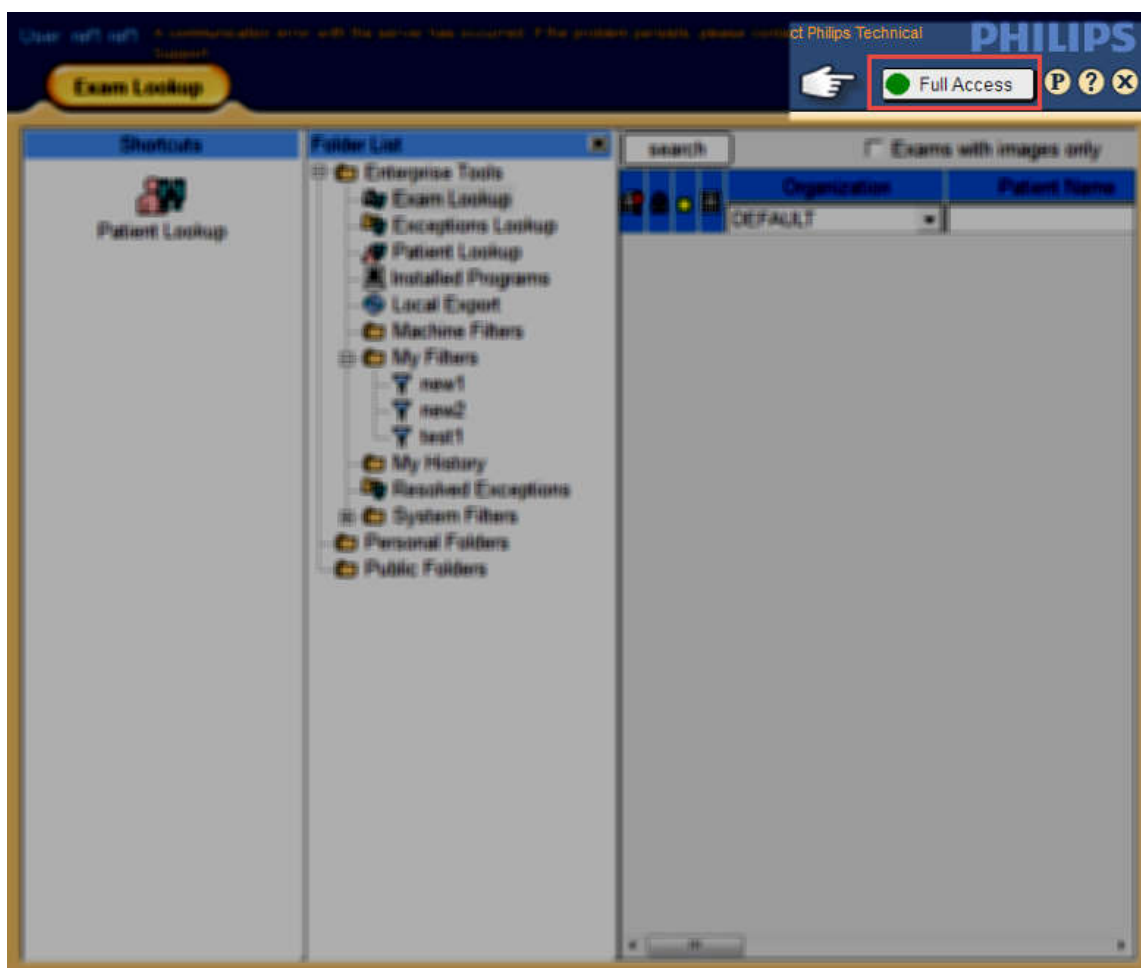
Overriding Exam Privacy

NOTE

Only the users who are assigned with the rights to System Access: Allow breaking exam privacy” in the Admin Tool will be able to see the “Full Access” button.

To override the Exam Privacy follow these steps:

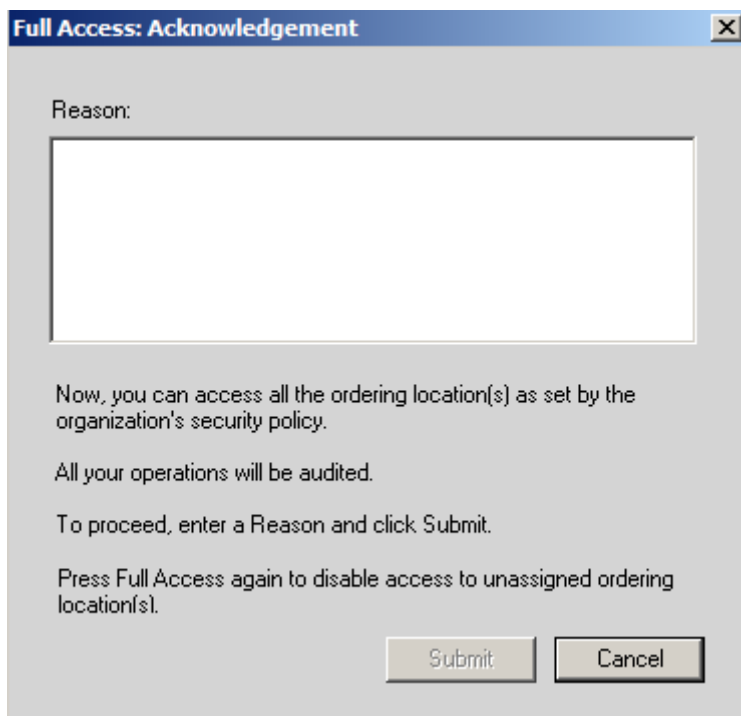
1. Click the **Full Access** button in the upper right corner of the IntelliSpace PACS Control Strip.
 - The Full Access button will appear in **green color** when Full Access is not in force
 - The Full Access button will **turn red in color** when Full Access is in force



On clicking the Full Access button the “ **Full Access: Acknowledgment**” window displays.

4522.170.2790.1/730 * 2018-01-09

Philips



The dialog box has a title bar with the text "Full Access: Acknowledgement" and a close button. Inside, there is a label "Reason:" followed by a large empty text box. Below the text box, there is a paragraph of text: "Now, you can access all the ordering location(s) as set by the organization's security policy." followed by "All your operations will be audited." and "To proceed, enter a Reason and click Submit." Below this, another paragraph says "Press Full Access again to disable access to unassigned ordering location(s)." At the bottom right, there are two buttons: "Submit" and "Cancel".

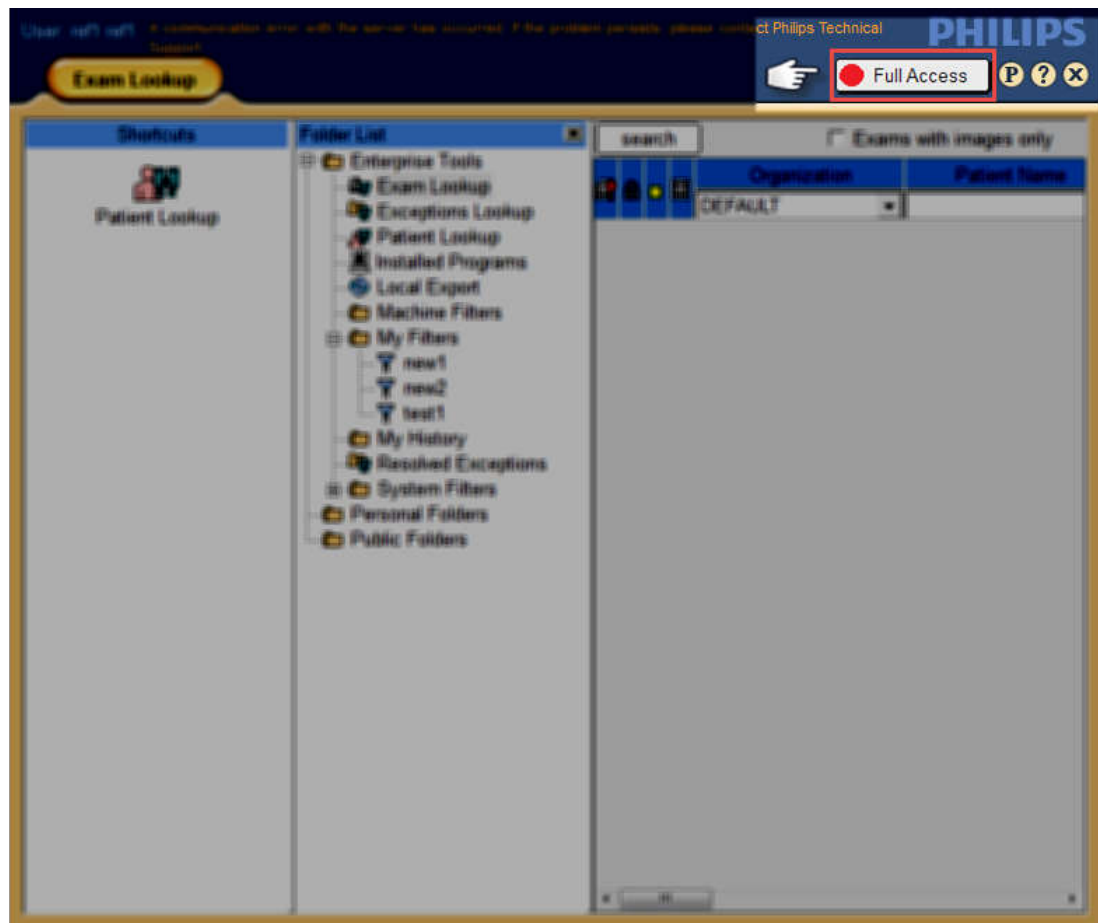
2. Enter a reason to activate the **Submit** button.
3. Click **Submit** to override exam privacy.

NOTE

All the operations performed by the user in the Full Access mode will be audited.

You will be able to access all the ordering locations subject to the organization's security policy.

1. Click the **Full Access** button again to disable full access mode and return to the Exam Privacy state (the color of the button will change back to green).



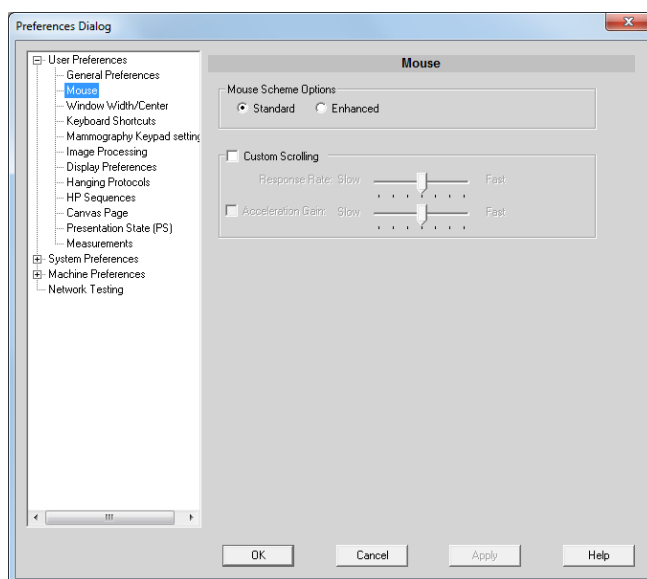
4522.170.2790.1/730 * 2018-01-09

Setting Mouse Preferences

You set the behavior of the mouse in the **Mouse** Preferences dialog box. Two preferences are available:

- **Mouse Scheme Options:** Allows you to choose whether you want to use the standard mouse actions and cursor (**Standard**) or use cursors whose shape indicates their action (**Enhanced**). **Standard** is enabled by default. See [“Standard Mouse Scheme” on page 529](#) and [“Enhanced Mouse Scheme” on page 531](#).
 - **Scrolling:** Uses the **Coarse Fast Cine** feature by default. Users who prefer to have images controlled by precise mouse movements can set **Custom Scrolling** options. See [“Scrolling” on page 531](#).
1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
 2. Under User Preferences, click **Mouse**. The right side of the **Preferences** dialog box displays the mouse settings.

Philips

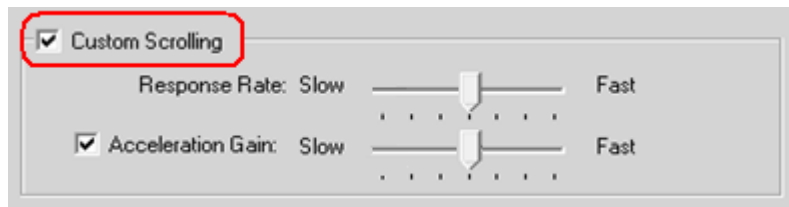


3. Set one of the following **Mouse Scheme Options**. If you do not want to use the default **Coarse Fast Cine** scrolling method, you can enable **Custom Scrolling** (it is disabled by default). With **Custom Scrolling**, you can define how precise image movements are controlled by mouse movements so that images are transitioned based on the distance the mouse travels. When you enable **Custom Scrolling**, the image stack begins to move immediately when the mouse moves and stops incrementing immediately when the mouse stops moving, based on the rate sets on the sliders (from slow to fast). When **Custom Scrolling** is enabled, **Coarse Fast Cine** is disabled. See [“Scrolling” on page 531](#)
 - **Standard:** Select if you want to use the standard mouse actions and cursor. See [“Standard Mouse Scheme” on page 529](#).
 - **Enhanced:** Select if you want to use cursors whose shapes indicate their action, as follows. You can cycle through the cursor modes by double-clicking the middle mouse button or choosing a mode from a menu. You still double-click the left mouse button to select images and use click-drag to perform the mouse mode functions. Note that Scroll mode is only available for stack images. See [“Enhanced Mouse Scheme” on page 531](#).

Cursor	Description
	Window Width/Level
	Pan
	Zoom

Cursor	Description
	Scroll
	Acceleration Gain

- If desired, select the **Custom Scrolling** check box and move the **Response Rate** slider to the desired speed to set how many images will be displayed, based on the distance the mouse travels. Note the following:
 - The distance of mouse movement directly correlates to the number of images that increment in the stack, after the entire image stack has been read into the IntelliSpace PACS memory.
 - When the slider is set in the middle position, the stack scrolls with a standard movement across the height of the display is approximately 900 images (assuming a 2560 x 2048 monitor in a Landscape position).
 - By default, the slider is set to the middle position; **Slow** can go 30% lower and **Fast** can go 30% higher than the default Mouse Properties settings in Windows..

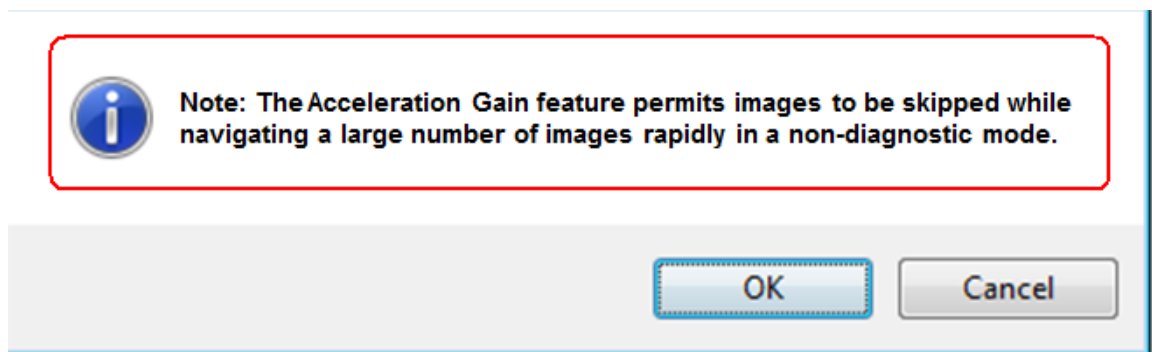


- If desired, select the **Acceleration Gain** check box and move the slider to the desired acceleration sensitivity.



WARNING

When the Acceleration Gain option is selected, the cursor changes shape when a set of images is passed over and not shown to indicate that some image skipping is occurring. This is analogous to a flipping through the pages of a book to quickly get to the area of the book you want to begin to read. If you select the Acceleration Gain option, you must acknowledge the following message, which informs you that images may be skipped when navigating a large number of images. You control when skipping occurs by the rapidity with which you move the mouse. The cursor changes shape to indicate that images are being skipped during a non-diagnostic transversal of images. Click OK in this message to proceed.



1. Click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

NOTE

The calculations used by the sliders are based on default Mouse Properties settings for Windows on that machine. If the user changes these default settings, the relative values of Slow and Fast on the sliders are impacted. We recommend that users retain the default value for Mouse Properties in Windows when using this feature.

Setting Window Width/Center User Preferences

You can create, edit, and delete Window Width/Center preferences for your own use; System Administrators can set Window Width/Center preferences for all IntelliSpace PACS users. See [“Setting Window Width/Center System Preferences” on page 473](#). You can specify any modality but you must give a unique name to a new custom setting.

The Window Width/Center preferences allow you to configure an image for optimal viewing or to highlight certain details for better visibility. For example, changing the brightness or contrast of an image can allow you to more clearly view the part of the image you are most interested in. Separate preferences are available for modalities (for example, CT or MR) and for tissue (for example, bone or lung). These settings are mapped to the number keys (1 through 9) in the order listed in the **Preferences** dialog box, allowing you to quickly apply a Window Width/Center setting while viewing images.

When an image is first displayed, IntelliSpace PACS uses the modality's default WW/WL setting, if that information is available in the DICOM. When you modify or add **Window Width/Center** settings, IntelliSpace PACS uses these settings over the system default Window Width/Center preferences.

Adding a Window Width/Center Setting

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Under User Preferences, click **Window Width/Center**. The right side of the **Preferences** dialog box displays the current window width and center settings.

3. Click **Add**. The **Add Window Width/Center** dialog box displays.
4. Enter the desired **Name** for the new window width/center setting. You can put a number or letter in front of the name for easier sorting.
5. Select a **Modality** from the list.
6. Enter values for the **Width** and **Center**.
7. Click **OK**. The preference is added to the list.
8. Click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Editing a Window Width/Center Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Window Width/Center**. The right side of the **Preferences** dialog box displays the current window width and center setting.
3. Select a window width and center preference and either double-click it or click **Properties**. The **Edit Window Width/Center** dialog box displays.
4. Change the settings as desired.
5. Click **OK**. The modified preference is displayed in the Window Width/Center list.
6. Click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting a Window Width/Center Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Window Width/Center**. The right side of the **Preferences** dialog box displays the current window width and center setting.
3. Select a window width and center preference and click **Delete**. The setting is deleted from the list.
4. Click **Apply** to save the settings and continue setting other preferences. If you delete all the User window and center settings, IntelliSpace PACS automatically restores the settings from the System window width and center settings. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Keyboard Shortcut Preferences

You can set keyboard shortcuts to map keys and key combinations to IntelliSpace PACS actions. See [“Keyboard Commands” on page 533](#) for a list of default keyboard shortcuts.

NOTE

The following keyboard shortcuts are not editable:

- Localizer Mode – F12
- Scout line Mode – F11
- Single Image Window Level – L
- Toggle Key Image – Space
- Worklist/Canvas Page Refresh – F4

NOTE

There are few keystrokes that cannot be used as shortcuts. See [“Keyboard Commands” on page 533](#) for the list.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Keyboard Shortcuts**. The right side of the **Preferences** dialog box displays the keyboard shortcuts that have been configured.
3. To change a keyboard shortcut, select it and click **Edit**.
4. In the **Edit Keyboard Shortcut** dialog, click in the **Shortcut** field and press the keys or combinations of keys you want to assign to the selected action.
5. If you want to set the shortcut back to its original setting, click **Reset**.
6. Click **Restore Default Settings** to reset all shortcuts back to their original settings.
7. Click **OK**. A message displays if the keyboard shortcut is already being used for another action. If this happens, choose another keyboard shortcut that is not already in use.
8. Click **Apply** to save changes.

Setting Mammography Keypad Settings

NOTE

In order to change the Mammography Keypad settings, the Philips mammography keypad must be attached to the client system.

You can set the functions for the Favorite key 1 and Favorite key 2 on the Philips mammography keypad to frequently used functions. Note that the standard keyboard shortcuts are not affected by using the keypad. For more information about the mammography keypad, see [“Tomo \(3D\) to C View localization” on page 439](#).

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.

2. Under User Preferences, click **Mammography Keypad settings**. The right side of the **Preferences** dialog box displays a list of keypad shortcuts in the dropdown list.
3. To change a keypad shortcut, click the dropdown arrow and select the function for the Favorite Key.
4. Click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Image Processing Preferences

You can set image processing preferences for edge enhancement, edge detection, median filters, and CLAHE.

- The **Edge Enhancement** settings allow you to make the edges more prominent while still showing low frequency (background) information within the image. See [“Enhancing the Edges of an Image” on page 270](#) to see how the **Edge Enhancement** preference is applied to images.
- The **Edge Detection** settings allow you to remove the low frequency (background) information from within the image, leaving only the edges visible. See [“Detecting the Edges of an Image” on page 271](#) for information on how the **Edge Detection** preference is applied to images.
- The **Median Filter** settings allow you to define a low pass filter to remove “noise” from the image with little or no smoothing of the image. You can use the Median Filter preference to place a 3x3 or 5x5 mask over the original image. The median (medium) value becomes the new pixel value. See [“Filtering the Image” on page 271](#) to see how the **Median Filter** preference is applied to images.
- The **CLAHE** (Contrast Limited Adaptive Histogram Equalization) settings utilize an adaptive form of histogram equalization that enhances the contrast adaptively across the image. See [“Using Contrast Limited Adaptive Histogram Equalization” on page 272](#) to see how the **CLAHE** preference is applied to images.

When you modify or add **Image Processing** settings, IntelliSpace PACS uses these settings over the system default **Image Processing** preferences.

NOTE

Images with Image Processing filters applied cannot be printed to film (DICOM Print) because Image Processing filters alter the presentation of images from the original DICOM presentation.

The **Edge Enhance** and **Edge Detect** preferences are applied to the entire series being viewed. A read-only list of active modalities is also available for each image processing preference. You can apply image processing filters using the menu. When an image processing filter is applied to an image, a “P” (Processed) icon is displayed in the metadata area of the image in the Exam Rack and in the image popup window.

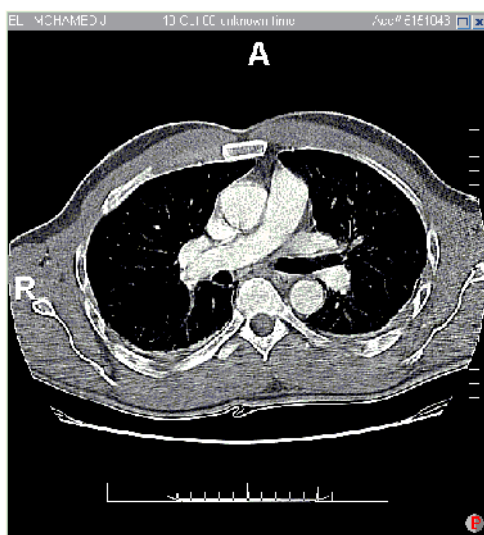


Image Processing filter applied

Fig. 62: Image with processing filter applied

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Image Processing**. The right side of the **Preferences** dialog box displays a list of image processing options.
3. To set preferences for **Edge Enhance**, do one of the following:
 - Click **Method** and choose **5 pt Laplacian** or **9 pt Laplacian**. The default value is **5-pt Laplacian**.
 - Click **Degree** and choose **Light**, **Medium**, or **Strong**. The default value is **Medium**.
 - Click **Modalities** to view a read-only list of modalities.
4. To set preferences for **Edge Detect**, do one of the following:
 - Click **Method**. **Sobel** is the only choice. The Sobel operator scales the result and adds it back into the original image data.
 - Click **Degree** and choose **Light**, **Medium**, or **Strong**. The default value is **Medium**.
 - Click **Modalities** to view a read-only list of modalities.
5. To set preferences for **Median Filter**, do one of the following:
 - Click **Method** and choose **3x3 Filter** or **5x5 Filter**. The default value is **3x3 Filter**.
 - Click **Modalities** to view a read-only list of modalities.
6. To set preferences for **CLAHE**, do one of the following:
 - Set the **Contextual Region Dimension** to **32**, **64**, **96**, or **128**. The default value is **32**.
 - Set the **Number of Bins** to **256** or **384**. The default value is **256**.
 - Set the **Clip Limit** to **1.5**, **2.0**, **2.25**, **2.50**, **2.75**, or **3.0**. The default value is **1.5**.
 - Set the **Map Level** to **0**, **1**, or **2**. The default value is **1**.
7. Click **Modalities** to view a read-only list of modalities.

8. Click **Apply** to save the settings and continue setting other preferences.
9. Click **OK** to save your changes and close the **Preferences** dialog box.

Restoring the Image Processing Preference Settings to the System Preferences Settings

If the System Administrator has changed the System preferences from their original settings, the new system preference values are applied.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Image Processing**. The right side of the **Preferences** dialog box displays a list of image processing options.
3. Click the method or degree you want to restore.
4. Click **Restore Defaults**. A confirmation message displays.
5. Click **Yes** to replace your Image Processing preferences with the system Image Processing preferences, or click **No** to keep your preferences.
6. Repeat steps 3 and 4 for each attribute to be changed (for example, **Edge Detect**). IntelliSpace PACS restores the User Image Processing preferences to the System Image Processing preference values.
7. Click **OK** to save changes and close the **Preferences** dialog box.

Setting Display Preferences

You can set the various preferences in the **Display** section of the **Preferences** dialog box.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Display Preferences**. The right side of the **Preferences** dialog box displays a list of display options.
3. Set the **Screen Overlay Font Size** for diagnostic images to **Large**, **Medium**, or **Small**. The new font size is not used until you log out of IntelliSpace PACS and log back in. The value of each selection is determined by the Machine preferences font size settings. See [“Setting Display Monitor Preferences” on page 519](#).
4. Set the **Cine Playback Resolution** for a stacked image window displayed in cine to **Full Resolution**, **512x512**, **256x256**, **128x128**, or select a **Default Cine Rate** (values between 1 and 45). This rate is applied for studies that do not supply a “Recommended Display” or “Cine Rate” in their metadata.
 - A clip captured at a resolution of 1024 x 1024 can be played back at a resolution of 256 x 256. When you do this, series play cine clip is loaded faster because there is less data retrieved from the server, but the quality is lower. You can improve the image quality by pressing < **F9**>. Note that the Popup Window Size is independent from the image resolution. This means that in the previous example, the initial Window Size might by

512 x 512. If the stack series is displayed at 256 x 256 it will be stretched to fit the window size. When you press < **F9**>, the additional image information is retrieved and the image quality is full fidelity for that window size, which is 512 x 512.

- Set the frames per second playback rate for the **Default Cine Rate** from 1 to 45. If the “Recommended Display Frame tag (0008,2144)” is present, it is used as the initial frame rate. If this DICOM tag is not present, IntelliSpace PACS looks for the “Cine Rate” DICOM tag (0018,0040). If neither of these tags are present, the specified **Default Cine Rate** is used as the initial frame rate.

NOTE

The configured **Default Cine Rate** value is specific to IntelliSpace PACS Radiology and IntelliSpace PACS Enterprise.

For example, if the **Default Cine Rate** for IntelliSpace PACS Radiology is set to "40", this will not be the "Default Cine Rate" for IntelliSpace PACS Enterprise. Ensure to set separate **Default Cine Rate** for IntelliSpace PACS Enterprise.

5. Set the **Scout Line Mode** to **Single**, **Bracket**, or **All**. This setting determines how scout lines are displayed when the **Scout Line** tool is active and you click an image.
 - Select **Single** to show the location of the slice that is being reviewed.
 - Select **Bracket** to show the location of the slice being reviewed as well as two lines showing the limits of the series being reviewed.
 - Select **All** to show a single scout line, as well as a line for every slice in the series being reviewed.
6. Set the **Localizer Mode** to **No Scout Lines** or **Show Scout Lines**. This setting determines whether or not scout lines are displayed when the **Localizer** tool is active and you click on an image.
7. Set the following options for the **Magnifying Glass**. See [“Using the Magnifying Glass Tool” on page 278](#).
 - The desired **Zoom** factor (between 150 and 1600).
 - The percentage of the hosting window that you want to magnify (5% to 80%).
 - For mammography, the recommended percentage is 10% of the hosting window.
8. Set a value for initial slab view in **Default Thickness** under “Tomo Slab View”. Slabs can be created out of the Tomo stack on the fly via the context menu and keyboard shortcut. The initial slab is created based on the setting in User Preferences.
9. Slabs can be created out of the Tomo stack on the fly via the context menu and keyboard shortcut. The initial slab is created based on the number of default frames specified in the **Tomo Slab View**:
 - For initial slab view, enter a value for “Default Thickness”.
10. Click **Apply** to save the settings and continue setting other preferences. Click **OK** when you are done.

Setting User Hanging Protocol Preferences

Hanging Protocols determine how certain exams (for example, a certain modality and/or body part) are hung when displayed in diagnostic monitors. You can set the monitor mode to one of over ten different configurations. Associating the monitor mode with the modality and body part that you have specified, ensures that exams of that type are always hung in the desired fashion.

You can view, delete, import, or export configured hanging protocols from the User preferences. Note that you can only add or edit hanging protocols from the IntelliSpace PACS Radiology Canvas Page. See [“Configuring Hanging Protocols” on page 368](#).

Viewing a Hanging Protocol

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Hanging Protocols**. The right side of the **Preferences** dialog box displays a list of hanging protocol options.
3. Select the hanging protocol you want to view and click **Properties**. The **Hanging Protocol** dialog box opens in Read Only mode.
4. Review the information on the first screen and click **Next** to view more settings, then click **Next** two more times to view further settings.
5. When you have finished reviewing the information, click **Finish**. You return to the **Preferences** dialog box.

Deleting a Hanging Protocol

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Hanging Protocols**. The right side of the **Preferences** dialog box displays a list of hanging protocol options.
3. Select the hanging protocol(s) you want to delete and click **Delete**.
4. Click **Apply** to save the settings and continue setting other preferences. Click **OK** when you are done.

Exporting a Hanging Protocol

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to User Preferences. The list of available system preferences displays.
3. Click **Hanging Protocols**. The right side of the **Preferences** dialog box displays a list of the current hanging protocols, and allows you to view, delete, export, or import hanging protocols.
4. Select the hanging protocols you want to export and click **Export**. The **Save As** dialog box opens.

5. Either select a folder or create a new folder to export the hanging protocol, and click **Save**. The file is saved in .xml format in the chosen directory and you return to the **Preferences** dialog box.

Importing a Hanging Protocol

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to User Preferences. The list of available system preferences displays.
3. Click **Hanging Protocols**. The right side of the **Preferences** dialog box displays a list of the current hanging protocols, and allows you to view, delete, export, or import hanging protocols.
4. Select the hanging protocol you want to import and click **Import**. The **Open** dialog box opens.
5. Select either a single .xml file or multiple xml files for the hanging protocol you want to import and click **Open**. The successfully imported XMLs will be highlighted in the Hanging Protocol Dialog.

You return to the **Preferences** dialog box.

Setting User Hanging Protocol Sequences

After User or System hanging protocols have been configured, you can define the sequence in which they are displayed.

You can view and delete hanging protocol sequences from the User preferences. Note that you can only add or edit hanging protocol sequences from the IntelliSpace PACS Radiology Canvas Page. See [“Configuring Hanging Protocol Sequences” on page 406](#).

Viewing a Hanging Protocol Sequence

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **HP Sequences**. The right side of the **Preferences** dialog box displays a list of hanging protocol sequences.
3. Select the hanging protocol sequence you want to view and click **Properties**. The **HP Sequence** dialog box opens.
4. Review the information.
5. When you have finished reviewing the information, click **OK**. You return to the **Preferences** dialog box.

Deleting a Hanging Protocol Sequence

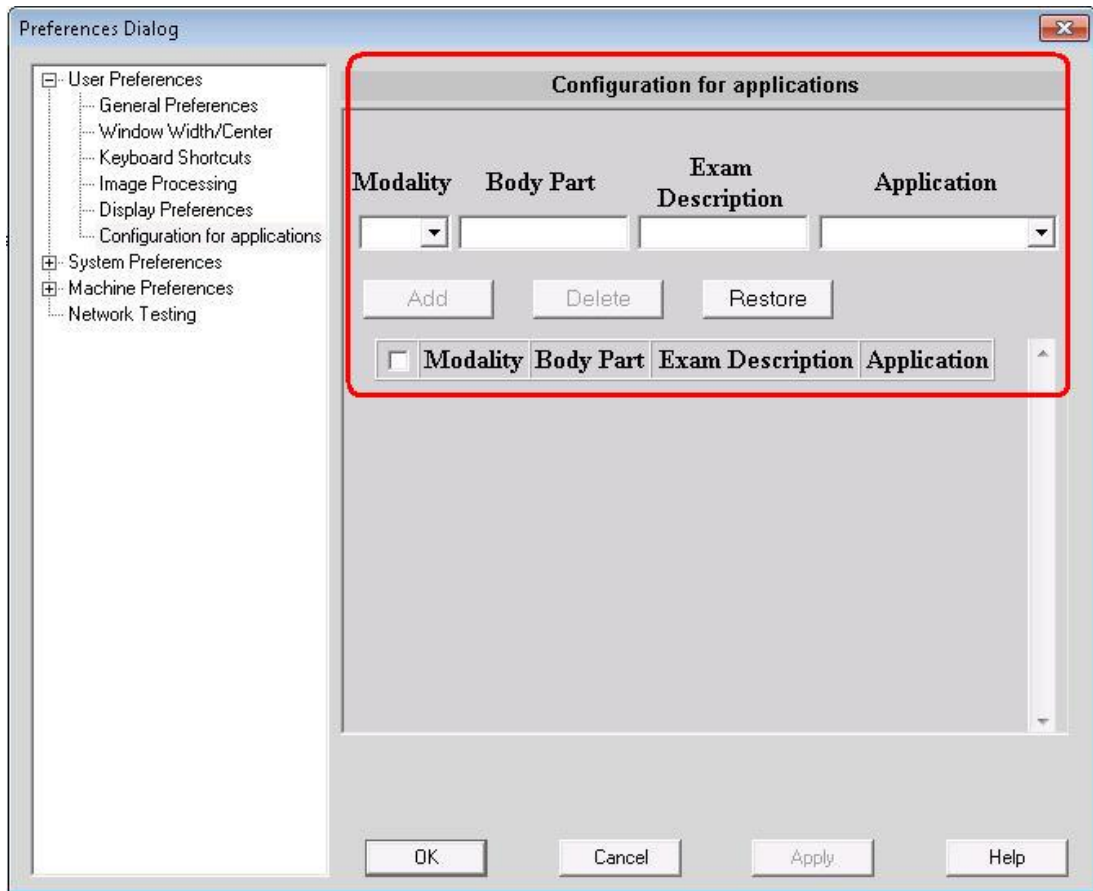
1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **HP Sequences**. The right side of the **Preferences** dialog box displays a list of hanging protocol sequences.

3. Select the hanging protocol sequence you want to delete and click **Delete**.
4. Click **Apply** to save the settings and continue setting other preferences. Click **OK** when you are done.

Setting Applications Configuration Rules

You can add and delete rules in the Preferences dialog in IntelliSpace PACS, only if Volume Vision is installed. To open this dialog, do the following:

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip. The Preferences dialog displays.
2. Click the **+** sign next to **User Preferences** in the Preferences dialog.
3. Select **Configuration for Applications**. The Configuration for Applications panel displays in the right pane of the Preferences dialog.



Adding a Rule

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. In the **User Preferences** list, click **Configuration for Applications**. The Configuration for Applications panel displays in the right pane of the Preferences dialog.

3. Select a modality from the **Modality** dropdown list (Required).
4. Optionally, enter a body part in the **Body Part** text field, or leave the field empty.
5. Optionally, enter an exam description in the **Exam Description** field, or leave this field empty.
6. Select an application from the **Application** dropdown list (Required).
7. Click **Add**.
8. To add another rule, perform Steps 3 through 6 of this procedure.
9. Click **OK** when you are done adding rules.

Deleting a Rule

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. In the **User Preferences** list, click **Configuration for Applications**. The Configuration for Applications panel displays in the right pane of the Preferences dialog.
3. Select the check box of the rule(s) that you want to delete.

NOTE

To select all rules, select the check box to the left of the word 'Modality' in the middle of the Configuration for Applications panel.

1. Click **Delete**.
2. To restore a deleted rule, click **Restore**.
3. Click **OK** when you are done deleting rules.

Setting Canvas Page Preferences

You can specify preferences for the patient and exam information areas of the IntelliSpace PACS Radiology Canvas Page.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Canvas Page**. The right side of the **Preferences** dialog box displays the available preferences.
3. Select the check boxes for the preferences you wish to set in the **Patient Information Area** and the **Exam Information Area**:
 - **Main Exam's Signs and Symptoms**
 - **Main Exam's History**
 - **Main Exam's Comments**
 - **Study Comments**

- **Visit Location**
 - **Exam's Sign and Symptoms**
 - **Exam's History**
 - **Exam's Impression**
 - **Reason for Study**
4. Click **Apply** to save the settings and continue setting other preferences. Click **OK** when you are done.

Setting Presentation State (PS)

You can specify the preferences for displaying various options from a Presentation State when applied:

NOTE

Even if a presentation state is saved with these display options, the display options will not take effect unless they are selected in the Preference Dialog.

The Presentation State display options are:

- **Apply image processing from PS:** Selecting this option will display the image processing operations on the presentation state.
 - Image Processing option includes Edge Detect, Edge Enhance, Median Filter, CLAHE, Invert Image, WW/WL
- **Apply flip/rotate from PS:** Selecting this option will display the flip/rotate operations on the presentation state.
- **Apply zoom/pan from PS:** Selecting this option will display zoom/pan applied as part of the presentation state.
- **Apply clone from PS:** Selecting this option will display clone applied as part of the presentation state.

Importing All and Exporting All User Preferences

You can import all and export all the following preferences:

- **Window Width/Center**
- **Image Processing**

Importing preferences overrides any preferences in the system. A warning message displays when you import preferences.

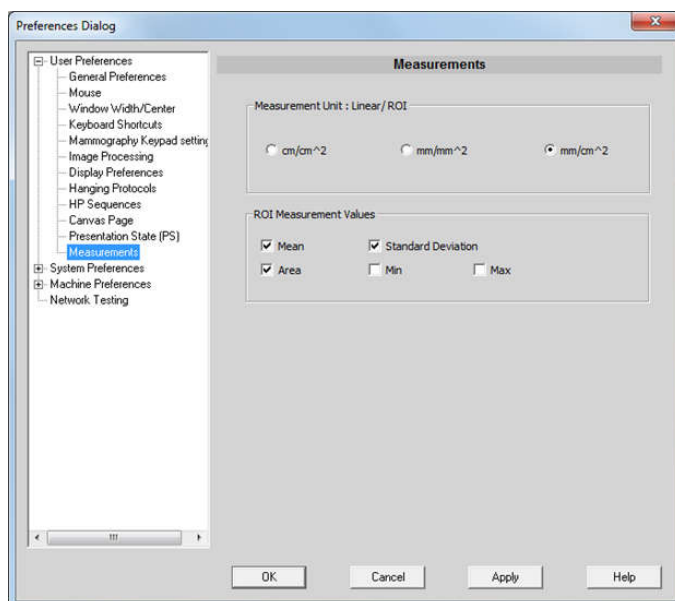
1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.

2. Select one of the previously specified User Preferences in the preference tree.
3. Right-click the preference. From the menu, choose either the **Import All** or **Export All** option.
 - When you select **Import All**, the following message displays: “**Importing preferences will override the existing preferences. Do you want to continue?**” Click **Yes** and the Open dialog displays, prompting you to select the specific .xml file to import.
 - When you select **Export All**, The **Save As** dialog displays, and you are prompted to save the specific .xml file that corresponds to the preference group you have selected.

Setting Measurements

You can set the **Measurement Unit** and **ROI Measurement** values using **Measurements** section of the **Preferences** dialog box.

- ▶ Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip to open the Preference Dialog
- ▶ In the **Preference Dialog**, expand **User Preference** and select **Measurements**.



The right side of the **Preferences** dialog box displays the available Measurements preferences. The **Measurements** preferences is divided into two regions:

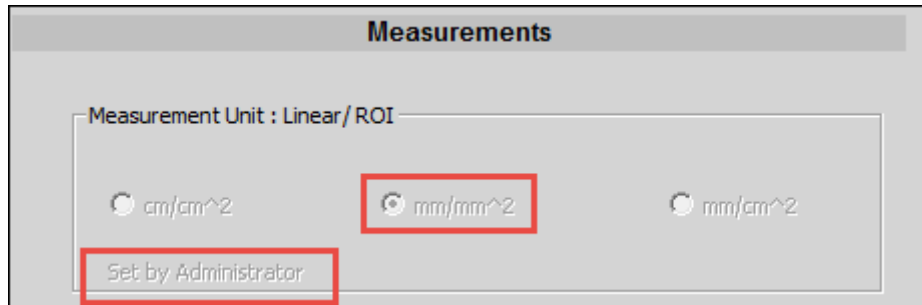
- Measurement Unit : Linear/ROI
- ROI Measurement Values

Measurement Unit : Linear/ROI

Use the **Measurement Unit : Linear/ROI** region set the measurement units for the Linear and Region of Interest measurements. The default option is **mm/cm²**.

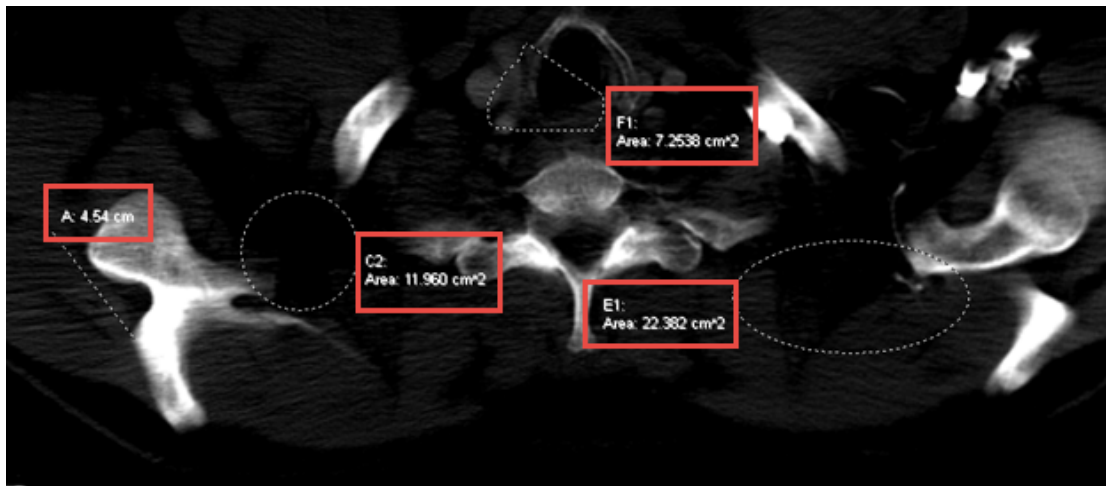
NOTICE

The Measurement Unit : Linear / ROI options will be available for selection only if the "Set for all users" check box is not selected in the System Preference--> Measurements--> Measurement Unit : Linear / ROI view. If the "Set for all users" option is selected this option will be disabled. When Measurements options are disabled, the option selected by the administrator in the System Preference will take effect and the message "Set by administrator" will be displayed.

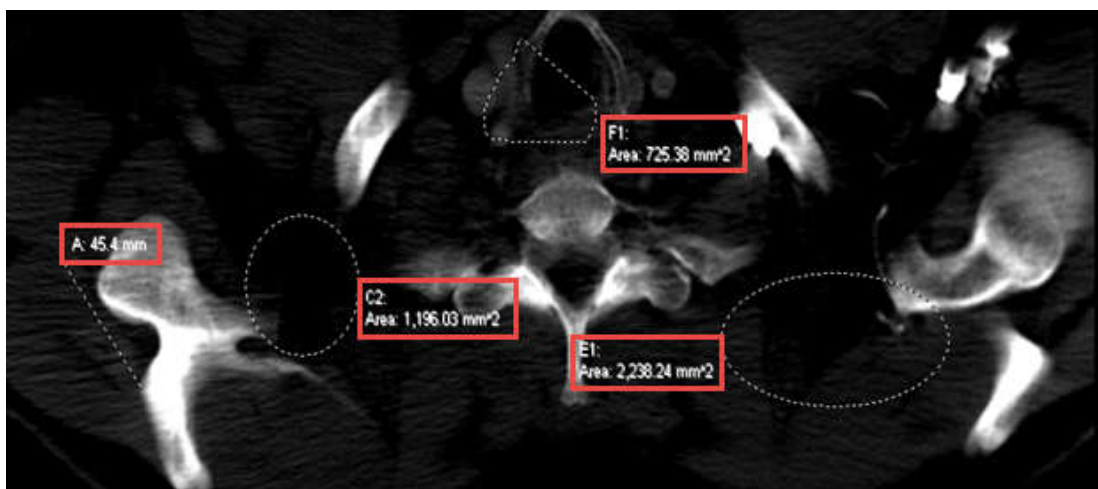


See [“Setting Measurement Preferences” on page 513](#) for more information.

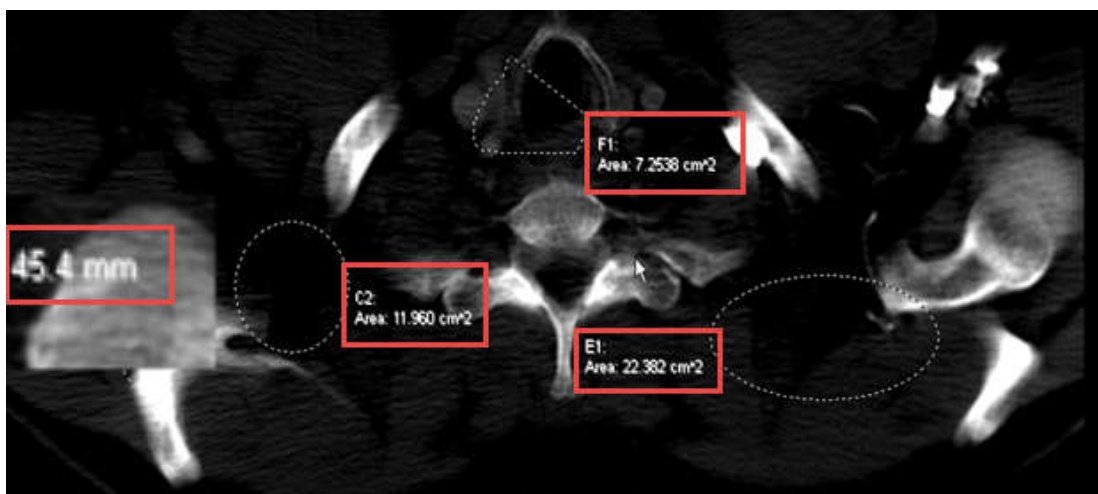
- cm/cm²: Select this option to set the Linear measurement unit to centimeters and ROI measurement unit to centimeters square.



- mm/mm²: Select this option to set the Linear measurement unit to millimeters and ROI measurement unit to millimeters square.



- **mm/cm²:** Select this option to set the Linear measurement unit to millimeters and ROI measurement unit to centimeters square.



NOTICE

The Measurement Unit : Linear/ROI selections made will immediately reflect in any open pop-ups in the canvas page.

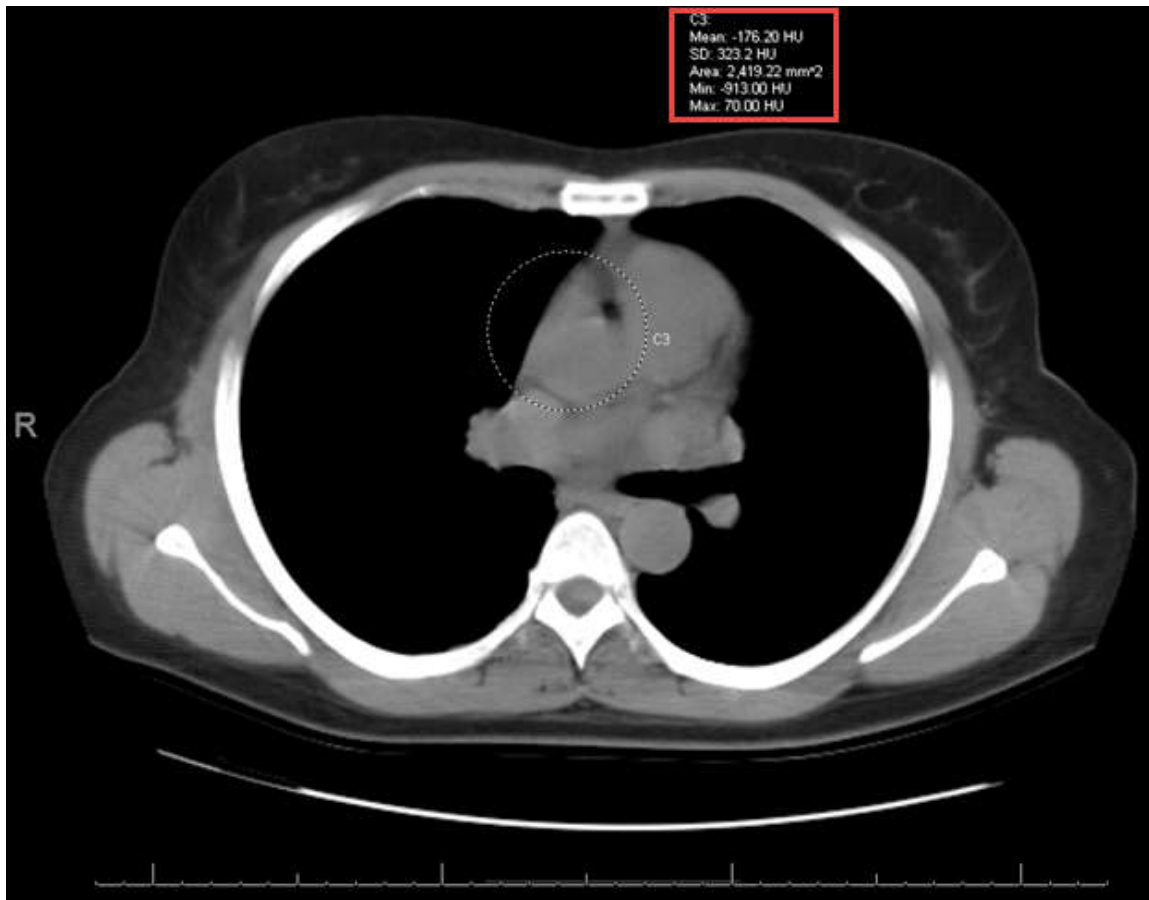
ROI / Measurement Values

In the **ROI /Measurement Values** region select the required values to be displayed when drawing ROI measurements. At least one option should be selected. The selections made will immediately reflect in any open pop-ups in the canvas page. The default selections are **Mean**, **Standard Deviation** and **Area**.

- **Mean:** Select this option to view the mean value of the ROI as part of the measurement values.

- **Standard Deviation (SD):** Select this option to view the standard deviation value of the ROI as part of the measurement values.
- **Area:** Select this option to view the area value of the ROI as part of the measurement values.
- **Min:** Select this option to view the minimum pixel value of the ROI as part of the measurement values
- **Max:** Select this option to view the maximum pixel value of the ROI as part of the measurement values

A sample image with all the ROI measurement values displayed is provided below for reference:



4522.170 27901/730 * 2018-01-09

Philips

22 Setting System Preferences

System Administrators can set preferences to customize IntelliSpace PACS for individual needs and work habits. There are two types of preferences System Administrators can set:

- Systems preferences that affect every user.
- Machine preferences for settings related to the machine on which you are currently working. See [“Setting Machine Preferences” on page 517](#).

System Administrators can set the following System preferences:

- **General Preferences:** See [“Setting General Preferences” on page 471](#)
- **Window/Width Center:** See [“Setting Window Width/Center System Preferences” on page 473](#)
- **Image Processing:** See [“Setting Image Processing Preferences” on page 475](#)
- **Annotations:** See [“Setting Annotation Preferences” on page 477](#)
- **DICOM Sources:** See [“Setting DICOM Sources Preferences” on page 478](#)
- **Screen Overlays:** See [“Setting Screen Overlay Preferences” on page 484](#)
- **Paper Printing:** See [“Setting Paper Printing Preferences” on page 489](#)
- **iExport:** See [“Setting iExport Preferences” on page 491](#)
- **iQuery:** See [“Setting iQuery Preferences” on page 493](#)
- **Plug-Ins:** See [“Setting Plug-In Preferences” on page 494](#)
- **DICOM Print:** See [“Setting DICOM Print Preferences” on page 496](#)
- **Patient Columns:** [“Setting Patient Columns Preferences” on page 513](#)
- **Workflow:** See [“Setting Workflow Preferences” on page 502](#)
- **Autoscaling:** See [“Setting Autoscaling Preferences” on page 502](#)
- **Ensure All Viewed:** See [“Setting Ensure All Viewed Preference” on page 504](#)
- **Body Part Dictionary:** See [“Setting Body Part Preferences” on page 509](#)
- **Hanging Protocols:** [“Setting System Hanging Protocol Preferences” on page 510](#)
- **HP Sequences:** [“Setting System Hanging Protocol Sequences” on page 512](#)

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. In the **Preferences** dialog box, click the **+** sign to display the list of System Preferences.
3. Set the desired system preferences.
4. Click **Apply** to set a preference and continue setting other preferences. Click **OK** when you are done.

Setting General Preferences

System Administrators can set the General system preferences that control the logon welcome message, variance for image/series linking, and other options.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **General Preferences**. The right side of the **Preferences** dialog box displays the current general preferences.
4. If desired, enter a new **Logon welcome message**. You can use this message to display Help Desk information or to notify users of scheduled maintenance to IntelliSpace PACS.
5. Enter the text for the message users see the first time they attempt to perform an action on a patient who has been designated as a VIP patient. This message can be up to three lines. See [“Working with VIP Patients” on page 77](#).
6. In **Image/Series Linking**, select the number of degrees (up to 40 degrees) to allow for linking variance. This preference is primarily used to link oblique series that deviate up to 40 degrees from a true plane (Axial, Coronal, or Sagittal) with series that are oriented with a true plane.
7. In **Options**, you can select the following:
 - Select the **Allow DICOM Query from Exam** check box if you want to enable DICOM queries from the exam using the iQuery tool.
 - Select the **Automatically apply VOI LUT when available** check box to enable auto-selection of the first VOI LUT included in the image. For mammography, make sure this check box is selected, as this feature enables that the optimized mammography LUT presentation as sent from the modality is applied.
 - Select the **Allow exams to be marked read more than once** check box if you want to be able to “Mark Read” exams that have already been read. If this check box is selected, you can right-click in the exam margin and select **Update Mark Read Presentation State** from the menu.
 - Select **Enable caching of exams with priors** check box to activate the **“Cache exams with priors”** menu to fetch the studies from the server and store it locally in the hard disk.

NOTE

When the “Enable caching of exams with priors” option is enabled, there is a risk of increasing the load on the server especially when a large number of studies are continuously cached by a large number of users. Therefore, when this option is enabled, it is recommended that the PACS administrator limits the option to cache the exam to a select few, by ensuring that only a selected few radiologist get the permission to cache exams. This can be done by assigning the Task “Image:Export Images to Local cache” in PACSAdministration page.

NOTE

For “Caching exams to priors” to take effect, user must logout and login again.

- On selecting **Enable caching of exams with priors** check box, the Automatically lock cached exams check box is enabled. Select this option to automatically lock the cached exams. To make the cached exams available for other users, ensure that this option is not selected.

NOTE

Only the cached exams will be locked and the priors will not be locked.

1. In **Image Orientation**, select the **Enable user preference for automatically flipping of Axial/Oblique CT/ PT-CT images** check box if you want individual users to be able to set their own flipping preferences. IntelliSpace PACS automatically flips any axial CTs or PT-CTs or oblique views that are up to 22.5 degree variance from the true axial plane where the patient's anatomical right is displayed on the right side of an image as in an acquisition where the patient is in prone position. This standard behavior is useful for users viewing CT or PT-CT Sinus studies where IntelliSpace PACS automatically flips to the most preferred viewing orientation.
 - In **Image Orientation**, select the **Axial Oblique CT/PT-CT: Anatomical right on left side of image window** check box if you want Axial and Oblique CTs or PT-CTs to always be displayed with the anatomical right on the left side of the image.
2. In the **Clinical Info Source** area, specify whether information for Patient Comments or Patient History comes from DICOM or Clinical Exam Notes (RIS). Choose one of the following:
 - **Main Exam's Comments:** Select **DICOM** or **Clinical Exam Notes**. The Patient Comments DICOM tag is (0010,4000).
 - **Main Exam's History:** Select **DICOM** or **Clinical Exam Notes**. The History DICOM tag is (0010,21B0).
3. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Window Width/Center System Preferences

System Administrators can create, edit, and delete the system supplied Window Width/Center preferences. Individual users can also create their own Window Width/Center preferences, which will override the system settings. See [“Setting Window Width/Center User Preferences” on page 455](#).

The Window Width/Center preferences allow you to configure an image for optimal viewing or to highlight certain details for better visibility. For example, changing the brightness or contrast of an image can allow you to more clearly view the part of the image you are most interested in. Separate preferences are available for modalities (for example CT or MR) and for tissue (for example, bone or lung). When an image is first displayed, IntelliSpace PACS uses the modality's default WW/WL setting, if that information is available in the DICOM.

Window Width/Center settings are mapped to the number keys in the order listed in the **Preferences** dialog box, allowing you to quickly apply a Window Width/Center setting while viewing images. For each setting, IntelliSpace PACS displays the name, modality, width, and center (for example, Brain, CT, 80, 35). You can have up to 100 settings saved.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Window Width/Center**. The right side of the **Preferences** dialog box displays the current window width and center settings.
4. Click **Add**. The **Add Window Width/Center** dialog box displays.
5. Enter the desired **Name** (up to 20 characters) for the new window width/center setting.
6. Select a **Modality** from the list.
7. Enter values for the **Width** and **Center**.
8. Click **OK**. The new preference is displayed in the **Window Width/Center** list.
9. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Editing a Window Width/Center Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Window Width/Center**. The right side of the **Preferences** dialog box displays the current window width and center setting.
4. Select a setting in the list and click **Properties** or double-click the setting in the list. The **Edit Window Width/Center** dialog box displays.
5. Change the settings as desired.
6. Click **OK**. The modified preference is displayed in the **Window Width/Center** list.
7. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting a Window Width/Center Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Window Width/Center**. The right side of the **Preferences** dialog box displays the current window width and center setting.
4. Select a window width and center preference and click **Delete**. The setting is deleted from the list.

5. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Image Processing Preferences

System Administrators can set the default image processing preferences for edge enhancement, edge detection, median filters, and CLAHE.

- The **Edge Enhancement** settings allow you to make the edges more prominent while still showing low frequency (background) information within the image. See [“Enhancing the Edges of an Image” on page 270](#) to see how the **Edge Enhancement** preference is applied to images.
- The **Edge Detection** settings allow you to remove the low frequency (background) information from within the image, leaving only the edges visible. See [“Detecting the Edges of an Image” on page 271](#) for information on how the **Edge Detection** preference is applied to images.
- The **Median Filter** settings allow you to define a low pass filter to remove “noise” from the image with little or no smoothing of the image. You can use the Median Filter preference to place a 3x3 or 5x5 mask over the original image. The median (medium) value becomes the new pixel value. See [“Filtering the Image” on page 271](#) to see how the **Median Filter** preference is applied to images.
- The **CLAHE** (Contrast Limited Adaptive Histogram Equalization) settings utilize an adaptive form of histogram equalization that enhances the contrast adaptively across the image. See [“Using Contrast Limited Adaptive Histogram Equalization” on page 272](#) to see how the **CLAHE** preference is applied to images.

Images/studies with **Image Processing** filters cannot be printed to film as diagnostic-quality images because these filters alter the digital data of the original DICOM.

These preferences are applied to the entire series being viewed. A list of active modalities is also available for each image processing preference. You can apply image processing filters using the menu. When an image processing filter is applied to an image, a “P” (Processed) icon is displayed in the metadata area in the Exam Rack and in the image popup window.

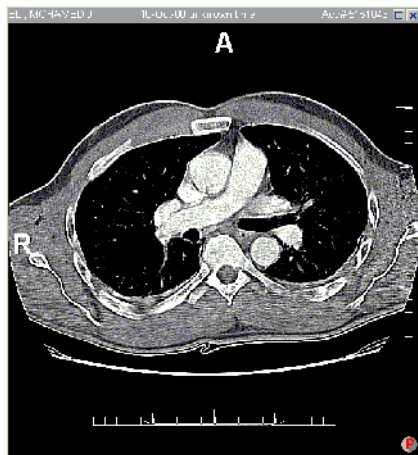


Image Processing filter applied

Fig. 63: Image with Image Processing icon

- The following warning message will be displayed in the banner when any modality is made disabled for the Image Processing Options, “Warning: Within Hanging Protocols and previously saved presentation states, image processing will not be applied for the disabled modality”.
1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
 2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
 3. Click **Image Processing**. The right side of the **Preferences** dialog box displays a list of image processing options.
 4. To set preferences for **Edge Enhance**, do one of the following:
 - Click **Method** and choose **5 pt Laplacian** or **9 pt Laplacian**.
 - Click **Degree** and choose **Light**, **Medium**, or **Strong**.
 - Click **Modalities** to view a list of modalities.
 5. To set preferences for **Edge Detect**, do one of the following:
 - Click **Method**. **Sobel** is the only choice. The Sobol operator scales the result and adds it back into the original image data.
 - Click **Degree** and choose **Light**, **Medium**, or **Strong**.
 - Click **Modalities** to view a list of modalities.
 6. To set preferences for **Median Filter**, do one of the following:
 - Click **Method** and choose **3x3 Filter** or **5x5 Filter**.
 - Click **Modalities** to view list of modalities.
 7. To set preferences for **CLAHE**, do one of the following:
 - Set the **Contextual Region Dimension** to **32**, **64**, **96**, or **128**.
 - Set the **Number of Bins** to **256** or **384**.

- Set the **Clip Limit** to **1.5, 2.0, 2.25, 2.50, 2.75, or 3.0**.
 - Set the **Map Level** to **0, 1, or 2**.
8. Click **Modalities** to view a list of modalities.
 9. Click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Annotation Preferences

System Administrators can set preferences for images to be annotated by physicians or Radiologists. IntelliSpace PACS has 10 pre-defined annotations, which is also the limit on the number of custom annotations. Therefore, before you can add a custom annotation to your preferences, you need to delete one of the 10 existing annotations. You can specify various font and arrow styles for annotations. See [“Annotating Images” on page 320](#).

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Annotations**. The right side of the **Preferences** dialog box displays a list of annotation preferences and buttons that allow you to add, edit, or delete annotations.
4. Click **Add**. The **Add Annotation** dialog box displays.
5. Enter a name for the annotation. This name is displayed as an annotation option in the menu.
6. Click **Font** if you want to change the font style and size for the annotation.
7. If you want the annotation to include an arrow, select the **Arrow** check box and specify the **Line Size** and **Line Style** for the arrow.
8. Click **OK**. The annotation is added to the list in the **Preferences** dialog box.
9. Click **Apply** to save the annotation preference and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Editing an Annotation Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Annotations**. The right side of the **Preferences** dialog box displays a list of annotation preferences and a **Properties** button that allow you to edit annotations.
4. Select the annotation you want to edit and click **Properties**, or double-click the annotation. The **Edit Annotation** dialog box displays.
5. Change the properties of the annotation as desired.
6. Click **OK**. The modified annotation is added to the list in the **Preferences** dialog box.

7. Click **Apply** to save the annotation preference and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting an Annotation Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Annotations**. The right side of the **Preferences** dialog box displays a list of annotation preferences and a Delete button that enables you to delete annotations.
4. Select the annotation you want to delete and click **Delete**. The annotation is removed from the list.
5. Click **Apply** to save the deletion and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting DICOM Sources Preferences

You can set DICOM Sources preferences to configure defaults for Window Center, Series Splitting, Presentation State, Collection, and Series and Image Sorting based on a specific modality or modality type. You can also stack images coming from RF, US, or XA.

DICOM sources must have unique values. If a DICOM source has the same number of selected identifiers and the same exam values within the identifiers, an error is displayed stating that the DICOM source already exists.

The DICOM Sources feature is only applied for single-frame modality images, not for multi-frame modality images. You can set up DICOM sources for a specific DICOM source or a generic DICOM source for each modality's images.

NOTE

IntelliSpace PACS does not process studies larger than 3-4 GB in raw DICOM data.

DICOM Source sorts series and images within a study rack as follows:

- First, the stacked series are sorted by the image sorting criteria defined in the DICOM Source or by Image Number. This defines which image is at the top of each stacked series.
- To sort the series across the rack, IntelliSpace PACS sorts by the series sort criteria defined in the DICOM Source. If that is identical (such as all series having the same series number), then IntelliSpace PACS sorts the series by descending series date/time (this is a hard coded secondary sort criteria). If the series also shares identical series date/time (as in digitally scanned films or time delay fluoroscopy images which often have the same values in the series level metadata), you can use an option to bypass the series sort criteria and use the image sorting criteria directly for sorting series display within a study rack.

**WARNING**

In the Add DICOM Source dialog box for Color WW/WL Settings, enabling any non-zero deviation value can cause alteration of true colors. Attempting to select a non-zero deviation value will cause the message “Setting a deviation value other than 0 can alter true color values” to display. You should also exercise caution when using this feature with scanned-in images.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays, sorted alphabetically by name.
3. Click **DICOM Sources**. The right side of the **Preferences** dialog box displays a list of DICOM sources and buttons that allow you to add, edit, or delete DICOM sources.
4. Click **Add**. The **Add DICOM Source** dialog box displays.

5. This dialog box has six tabs: **Main**, **Window/Center**, **Series Splitting**, **Sorting**, **Presentation State**, and **Collection**. You must fill in the information on each tab to adequately identify and properly link DICOM sources. You should be as specific as possible to prevent overlapping DICOM sources.
6. In the **Main** tab, enter the **Source Name** and **Description** for the DICOM source.

- Philips recommends that the **Source Name** matches the ID field in the DICOM metadata.
 - Philips recommends that the **Description** summarizes the function of the DICOM source (such as “Slice Thickness Series Splitting”).
7. In the **Identification** section, select each check box for which you have information. To add a generic DICOM Source, only select and complete the **Modality** field. If two or more DICOM sources are configured with an equal number of matching Identifiers, the DICOM source containing an Exam Code takes precedence and is applied over the DICOM source that does not contain an Exam Code.
- In the **AE Title** field, enter the name of the Application Entity, DICOM tag (0073,1003).
 - In the **Modality** field, enter the DICOM assigned modality type acronym, such as MR for Magnetic Resonance Imaging in DICOM tag (0008,0060).
 - In the **Manufacturer** field, enter the manufacturer’s name that appears in the DICOM metadata, DICOM tag (0008,0070).
 - In the **Serial Number** field, enter the serial number that appears in the DICOM metadata, DICOM tag (0018,1000). If your DICOM metadata does not provide a serial number, you should leave the box clear.
 - In the **Model Name** field, enter the model that appears in the DICOM metadata, DICOM tag (0008,1090).
 - In the **Exam Code** field, enter the desired code from the Exam Dictionary. This option lets you specify a specific series display, such as series splitting, that is only applicable to a specific exam code.
8. Click the **Window/Center** tab and enter the values you wish to use for this source.
- Select **Histogram calculation** to use a graph showing the total tonal distribution in the image. It maps Luminance, which is defined from the way the human eye perceives the brightness of certain colors. Every pixel in the color or gray image computes to a luminance value between 0 and 255. The histogram uses bins to graph the pixel count of every possible value of luminance or brightness. The total tonal range of a pixel’s 8-bit tone value is 0 to 255, where the 0 is the blackest at the left end and 255 is the whitest at the right end.
 - Select **DICOM Values**, which are the Window Width/Center values provided by the modality. DICOM sources utilizing DICOM values should be configured for a specific AE Title to ensure that images from other devices are not impacted. The DICOM modality values are stored in Window Center (0028,1050) and Window Width (0028,0151) DICOM attributes. Without these values, IntelliSpace PACS applies a histogram calculation that may be less desirable than what the Technologist acquired the image with.
 - Select **Fixed Values** and enter the **Width** and **Center** to define values that are applied automatically every time. This is most useful when using **Exam Code** level as a DICOM source.
 - For Lossless images you can select whether to enable simulated grayscale WW/WL and specify a deviation value from true gray from 0 to 3. For Lossy images, you can select whether to enable simulated grayscale WW/WL and specify a deviation value from true

gray from 0 to 32. If you select one of these check boxes, the **Restore Color Image** option is added to the WW/WL menu to enable you to restore the original RGB presentation of the image. Note that selecting a non-zero threshold is audited and you must acknowledge a warning message stating that this feature can alter true color values. Grayscale is represented in an RGB image by having the R, G, and B values identical, and in the range of 0 to 255, inclusive. The simulated grayscale WW/WL filters values that have identical RGB and treats them as a grayscale value, and replaces the RGB values with the newly computed WW/WL value. Due to noise from the scanner or degradation from lossy compression, values you may wish to interpret as grayscale deviate from an exact RGB representation. This deviation is treated as a parameterized deviation in the DICOM source so you can adjust the sensitivity to true gray to meet your needs.

9. Click the **Series Splitting** tab and specify how you would like to split series in the exam rack. For example, you might want to create separate image windows for monochrome versus color images. You can also right-click the exam menu on the rack to split the series on a per study basis. You cannot remove the following default attributes and tags, which are preconfigured and available for series splitting:

Attribute	Tag	Description
SOP Instance UID	0008,0018	The unique identifier of the SOP instance.
Contrast/Bolus Agent	0008,0010	The Contrast or Bolus agent used.
Scanning Sequence	0008,0020	Description of the type of data taken. Enumerated values: SE = Spin Echo IR = Inversion Recovery GR = Gradient Recalled EP = Echo planar RM = Research Mode (Not all search combination are valid.)
Slice Thickness	0008,0050	Nominal slice thickness in mm.
Echo Time	0008,0081	Time in ms between the middle of the excitation plus and the peak of the echo produced.
Echo Number(s)	0008,0086	The echo number used in generating this image. In the case of segmented k-space, it is the effective Echo Number.

Attribute	Tag	Description
Convolution Kernel	0008,1210	A label describing the convolution kernel or algorithm used to reconstruct the data.
Acquisition Number	0020,0012	A number identifying a single contiguous gathering of data over a period of time that resulted in this image.
Rows	0028,0010	
Columns	0028,0011	

1. Click **Add Attribute** if you want to use a different DICOM tag than the defaults for series splitting. The **Enter Tag** dialog box displays.
2. Enter the desired tag ID after the 0x and click **OK**. The DICOM tag is displayed in the list alphabetically. Series are split by rows and columns so that the system will not create a stack with differently sized images.
3. Click the **Sorting** tab to set how the studies and series coming from this DICOM source are sorted. Set the desired sorting options for **Series Sorting** and **Image Sorting**. To sort only by image criteria, not series criteria, select **Image Sorting Criteria Only**.
4. Click the **Presentation State** tab. The settings in this tab determine whether to display or hide some or all of the DICOM overlay planes when loading a GSPS. It specifies how IntelliSpace PACS interprets the overlay activation module in GSPS. **Overlay Activation** defines a way to control whether or not bit-mapped overlay information is displayed. The settings in this tab are only used when loading GSPS. If desired, under **Overlay Activation**, select the check box for **Initially display incorrectly specified overlays**. This setting is useful for sites that have applications that do not generate GSPS with correct overlay activation layer tags (60xx,1001). When selected, IntelliSpace PACS ignores the overlay activation tags that are present or missing in the GSPS created by an application that matches the DICOM Source and displays all overlay planes. If **Initially display incorrectly specified overlays** is not selected, IntelliSpace PACS client honors the overlay activation layer tags when loading GSPS. When a GSPS for an image that has DICOM overlays is loaded, IntelliSpace PACS only displays those overlay planes for which the overlay activation layer tag in the GSPS instance has some non-zero length value. IntelliSpace PACS does not display those overlay planes for which the overlay activation layer tag has no value or if the overlay activation tag is missing altogether. However, all overlay planes will be displayed when the display of overlays is toggled off and on using the shortcut keys for **Show/Hide All Overlays** or **Show/Hide Bit Overlays**. See [“Keyboard Commands” on page 533](#).
5. Click the **Collection** tab to enable **Auto collect series**. Selecting this option causes all series with less than or equal to the number of specified images in the exam to be added to a single collection by default, in the order of acquisition. The **Number of images** box specifies the maximum number of images that a series can have for it to be auto-collected. Enter the number (between 1 and 20000) in the box.

6. Select **Auto play collection**; this causes the collection to start auto-playing the rest of the images in the collection when the user starts scrolling through the current image in the collection. When the **Loop within series** check box is selected, it causes the auto-play to loop back to the beginning of the series after the last image in the series has been displayed, rather than moving to the next series in the collection. This box is checked by default.
7. When you have finished making your selections, click **OK**. If the DICOM Source is a duplicate a message displays.
8. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Editing a DICOM Source

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **DICOM Sources**. The right side of the **Preferences** dialog box displays a list of DICOM sources and a **Properties** button that allow you to edit DICOM sources.
4. Select the DICOM source you want to edit and click **Properties**, or double-click the DICOM source. The **Edit DICOM Source** dialog box displays. This dialog box has six tabs: **Main**, **Window/Center**, **Series Splitting**, and **Sorting**, **Presentation State**, and **Collection**. You must fill in the information on each tab to adequately identify and properly link DICOM sources to IntelliSpace PACS.
5. Edit the settings as desired.
6. Click **OK**. If the DICOM Source is a duplicate a message displays.
7. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting a DICOM Source

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **DICOM Sources**. The right side of the **Preferences** dialog box displays a list of DICOM sources and buttons that allow you to add, edit, or delete DICOM sources.
4. Select the DICOM source you want to delete and click **Delete**. The DICOM source is removed from the list.
5. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Screen Overlay Preferences

System Administrators can configure and modify preferences for overlays for various modalities, and specify where various patient and exam information will display in the four corners of each image/series frame. You can add a total of 50 overlays to images, meaning approximately 12 overlay items per corner. Each overlay must have a unique name. You can also do the following when configuring screen overlays:

- Create custom DICOM tags for screen overlay text or modify existing DICOM tag names and values.
- Set the screen font for overlay text.s
- Set up a basic design for screen overlays for a modality and export the overlays as an .xml file to be used as a template. You can then import and customize the overlays for different modality types.

Note the following:

- Magnetic Resonance Imaging modalities supply a number of overlays which are useful for physicians to have in gaining better tissue characterization. IntelliSpace PACS displays these MR overlays in conformance with traditional format that clinicians are used to. IntelliSpace PACS enhances support for MR specific tags as follows:
 - Scan Options (0018,0022) and Scanning Sequence (0018,0020): IntelliSpace PACS displays multi-values separated by a “/”
 - Magnetic Field Strength (0018,0087): IntelliSpace PACS displays MR Magnet value in Tesla.
 - Slice Gap as a Calculated Screen Overlay: The Slice Gap is calculated by the difference between the slice thickness (0018,0050) and the slice spacing (0018,0088). Note that this also applies to CT.
- IntelliSpace PACS displays the value for the 0019,1015 tag on the overlays via the CR Dose overlay. This means that if you select this overlay for an image, IntelliSpace PACS checks to make sure that it is an AGFA CR. If it is, the value received from the private tag 0019,1015 is displayed.
- The following pre-defined screen overlays are available for MG images:

Label / Name	String Value	Comment
KVP	((00180060)) kV	
Exposure	((00181152)) mAs	
Exposure Time	((00181150)) ms	
Filter Material	((00187050)) Filter	
Anode Target Material	((00181191)) Anode	
Compression Force	((001811A2)) N	
Body Part Thickness	((001811A0)) mm	
Entrance Dose (mGy)	((00408302)) mGy	

Label / Name	String Value	Comment
Mean Glandular Dose (dGy)	((00400316)) dGy	Up to the 3rd decimal place
Orientation		This Orientation tag looks for the Image Laterality tag (0020,0062) and the Orientation Tag (0018,5101). If the Orientation tag (0018,5101) is not present, IntelliSpace PACS checks for the presence of DICOM tag (0054,0220) for View Code Sequence and its sub-tag (0008,0104) for Mammography orientation display. Subsequently, IntelliSpace PACS supports DICOM sub-tags. IntelliSpace PACS displays both the Laterality and the Orientation on the same line. Screen overlays on MG images are displayed on the outside of the image, taking into account the image laterality, patient orientation, and image horizontal flip. This prevents overlays from displaying over the image.

- The Field of View for DICOM tag (0018,1100) is a diameter measurement of a region within the original dataset from which reconstruction of an image was derived. The original data and/or patient may exist outside of this region. In other systems and the film environment, this value is displayed in centimeters, even though the DICOM value is in millimeters. The calculated tag FOV/Recon Diameter looks at DICOM (0018,1100) but displays the equivalent values in centimeters. IntelliSpace PACS System Administrators can use the separate tag "Recon Diameter (mm)" to display the original DICOM value in millimeters.
- The Custom tag allows IntelliSpace PACS Administrators to customize a specific tag which may not have been already pre-defined by IntelliSpace PACS. Administrators define a known DICOM tag for configuration.
- The label of an item in the screen overlay is not shown if the item has no value in the DICOM data. However, for a label that comprises multiple items, the labels of all items are displayed if at least one item has a value.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Screen Overlays** The right side of the **Preferences** dialog box displays a list of current overlays for modalities, and allows to add, edit, delete, export, or import overlays.

4. Click **Add**. The **Overlay** dialog box displays the available overlay options and a default screen overlay. You can add a total of 50 overlays to images, meaning approximately 12 overlay items per corner. A line can contain multiple overlays (for example, name and sex on a single line). Blank lines are displayed if the information for that overlay is not available.
5. Enter a name for the overlay. The name must correspond to a modality type (for example, CR or US).
6. Select the desired overlay text from the tree control on the right side of the **Overlay** dialog box, and drag it to the screen mockup on the left side. Remove overlay text by selecting and dragging it off the screen mockup. You can only place overlay text on one of the screen's corners, not in the center of the image. Selected overlays are outlined with a red box. Note the following for mammography:
 - For MG properties, drag and drop “anode” and “filter” to the top of the list within the image. These are specific attributes for mammography, and these changes are automatically applied to CR, DR and MX mammo images. On mammo images, only the top and bottom corners on the frontal side are used for overlay text.
7. Click **Font** to change the display font for overlays in IntelliSpace PACS. The **Font** dialog box displays. Select a font from the list and click **OK**. You return to the **Overlay** dialog box.
8. You can double-click overlay text in the screen mockup to view the DICOM tag for that text, and to change the font weight and size. To add a custom DICOM tag, double-click an overlay field and enter the new **Name and Value** in the **Tag Edit** dialog box. The value corresponds to the DICOM metadata field which carries the information in question. For instance number, always use the DICOM Tag-Image Number - 0020,0013. As required, select the Font Weight and Relative Font Size. Click **OK** when you are done. You return to the **Overlay** dialog box.
9. When you have finished laying out the overlay text, click **OK**. You return to the **Preferences** dialog box.
10. In the **Preferences** dialog box, you can set the color used to display DICOM Bit Overlays (Overlays present in 60xx tag groups from image or GSPS). The display color of the overlays can be controlled by selecting options in this preference as below: :
 - **Black** – Overlays will be displayed in black color
 - **White** - Overlays will be displayed in white color
 - **Invert**- Black on white backgrounds and white on black backgrounds
 - **Show by Default**- If selected, the DICOM overlays, if present, will be displayed by default on the image

NOTE

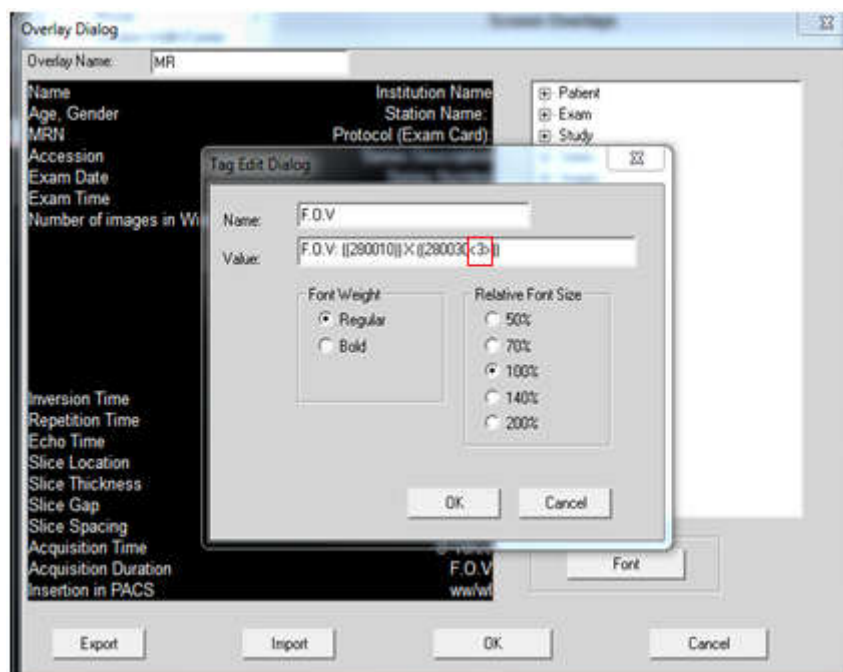
To see the above DICOM Bit Overlays, the "Enable Advanced Mammography feature" must be enabled in the iSite Administration.

11. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.
12. Click **OK** to save your changes and close the **Preferences** dialog box.

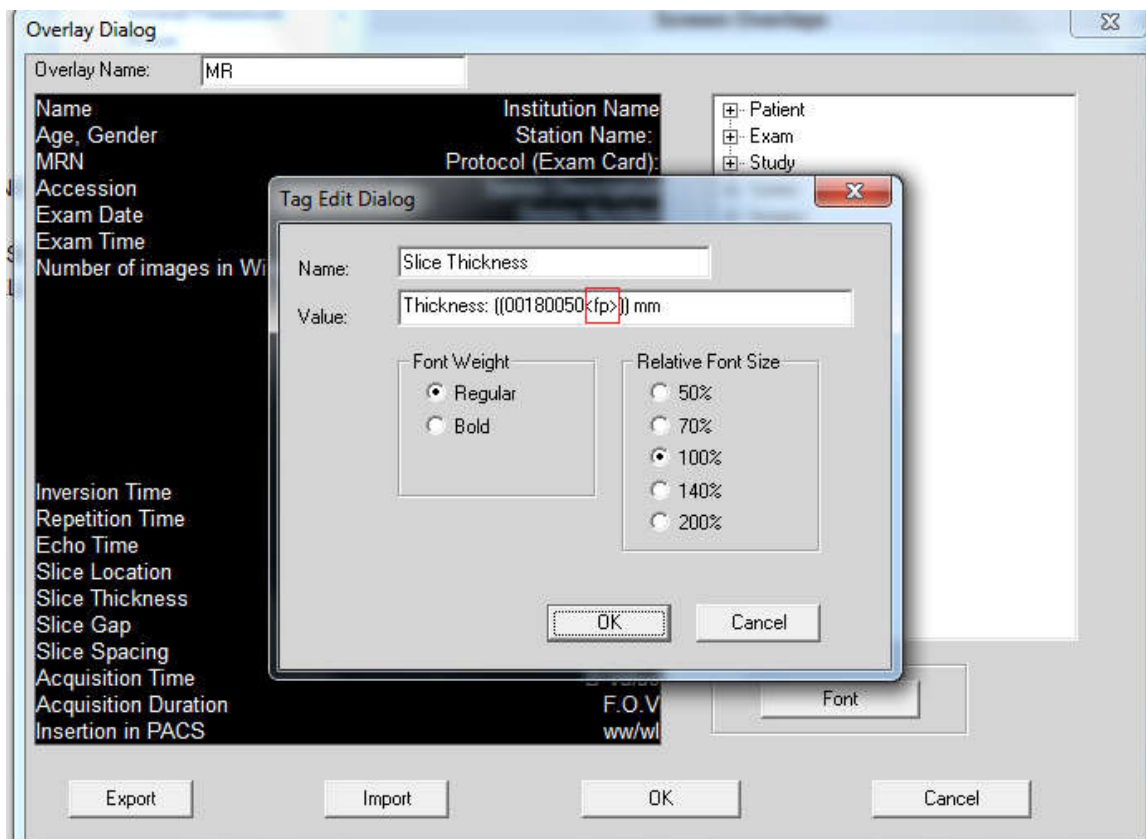
Configuring the Precision Values in Screen Overlays

The precision of the values displayed as screen overlays can be controlled by configuring a custom format in the **Overlay Dialog** from **Preferences->ScreenOverlay**.

1. Custom tags shall be specified by user during the configuration as screen overlays as shown below screen shot. The value will be rounded off to the number of decimal places to the number specified in between the pointed braces <>. If the value contains letters or special characters, the formatting will be ignored.



- All DICOM tags with value representation FD (Floating Point Double) or FL (Floating Point Single) will be rounded off to 2 decimal places, if no format explicitly specified by user in the overlay dialog.
- If the DICOM tag has Value Multiplicity greater than one, formatting will be done for each component. Example Pixel Spacing.
- The predefined tags, that used to get rounded off previously, will continue to be rounded off without any configuration change also. Example Slice Thickness (0018,0050) used to be rounded off to two decimal places. This will continue as is, unless user can specify explicitly to display full precision (FP) in the *Overlay Dialog* as shown in the screen shot below.



Editing a Screen Overlay

1. Display the **Screen Overlay** section of the System preferences.
2. Select the overlay you want to edit and click **Properties**, or double-click the overlay. The **Overlay** dialog box displays the properties of the selected overlay.
3. Select the desired overlay text from the tree control on the right side of the **Overlay** dialog box, and drag it to the screen mockup on the left side. Remove overlay text by selecting and dragging it off the screen mockup. You can only place overlay text on one of the screen's corners, not in the center of the image. Selected overlays are outlined with a red box.
4. Click **Font** if you want to change the display font for overlays in IntelliSpace PACS. The Font dialog box displays. Select a font from the list and click **OK**. You return to the **Overlay** dialog box.
5. You can double-click overlay text in the screen mockup to view the DICOM tag for that text, and to change the font weight and size. To add a custom DICOM tag, double-click an overlay field and enter the new **Name** and **Value** in the **Tag Edit** dialog box. The value corresponds to the DICOM metadata field which carries the information in question. For instance number, always use the DICOM Tag-Image Number - 0020,0013. As required, select the Font Weight and Relative Font Size. Click **OK** when you are done. You return to the **Overlay** dialog box.

- When you have finished laying out the overlay text, click **OK**. You return to the **Preferences** dialog box.
- Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting a Screen Overlay

- Display the Screen Overlay section of the System preferences.
- Select the overlay you want to delete and click **Delete**. The overlay is removed from the list.
- Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Exporting a Screen Overlay

- Display the Screen Overlay section of the System preferences.
- Select the overlay you want to export and click **Export**. The **Save As** dialog box displays.
- Enter a name for the overlay and click **Save**. The file is saved in .xml format in the chosen directory and you return to the **Preferences** dialog box.

Importing a Screen Overlay

- Display the Screen Overlay section of the System preferences.
- Click **Import**. The **Open** dialog box displays, allowing you to find the .xml overlay file you want to import.
- Find and select the .xml file and click **Open**. A message displays, asking you to confirm importing the file.
- Click **OK** to import, or **No** to cancel.
- The imported overlay is added to the list in the **Preferences** dialog box.

Setting Paper Printing Preferences

System Administrators can create unique print configurations that users can select to specify exactly how image metadata is printed as an overlay. You can save up to 10 print configurations. The overlays you configure here only apply to paper output, not to the overlays displayed on the screen or used in DICOM printing. See [“Printing to Paper” on page 346](#).

- Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
- Click the + sign next to System Preferences. The list of available system preferences displays.
- Click **Paper Printing**. The right side of the **Preferences** dialog box displays a list of the current paper printing preferences.
- Click **Add**. The **Add Windows Print Configuration** dialog box displays.

5. Enter the **Name** of the print configuration.
6. Select a **Format** from the list.
7. To configure the overlay for paper printing, click **Overlay**. The **Overlay** dialog box displays the available overlay options and a default screen overlay. You can add a total of 50 overlays to images, meaning approximately 12 overlay items per corner. A line can contain multiple overlays (for example, name and sex on a single line).
8. Select the desired overlay text from the tree control on the right side of the **Overlay** dialog box, and drag it to the screen mockup on the left side. Remove overlay text by selecting and dragging it off the screen mockup. You can only place overlay text on one of the screen's corners, not in the center of the image. Selected overlays are outlined with a red box.
9. Click **Font** if you want to change the display font for overlays printed on paper. The **Font** dialog box displays. Select a font from the list and click **OK**. You return to the **Overlay** dialog box.
10. You can double-click overlay text in the screen mockup to view the DICOM tag for that text. To add a custom DICOM tag, double-click an overlay field and enter the new **Name** and **Value** in the **Tag Edit** dialog box. The value corresponds to the DICOM metadata field which carries the information in question. For instance number, always use the DICOM Tag-Image Number - 0020,0013. Click **OK** when you are done. You return to the **Overlay** dialog box.
11. Click **OK** to return to the **Add Windows Print Configuration** dialog box.
12. When you have finished configuring the overlay, click **OK**. You return to the **Preferences** dialog box.
13. Enter a confidential text for the header in the **Confidential Data Header** box.
14. Enter a confidential text for the footer in the **Confidential Data Footer** box.

NOTE

- The maximum character limit for Data Header and Data Footer is 80 characters.
- At the time of printing, the user can select or deselect this header and footer using the "Mark as Confidential" option.

15. Click **Apply** to save the settings and continue to set other preferences.
16. Click **OK** to save your changes and close the **Preferences** dialog box.

Editing a Paper Printing Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Paper Printing** The right side of the **Preferences** dialog box displays a list of the current paper printing preferences.

4. Select the paper printing preference you want to edit and click **Properties**, or double-click the printing preference. The **Edit Windows Print Configuration** dialog box displays.
5. Make the desired changes to name, format, and overlay settings.
6. Click **OK**. You return to the **Preferences** dialog box.
7. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Exporting a Paper Printing Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Paper Printing**. The right side of the **Preferences** dialog box displays a list of the current paper printing preferences.
4. Select the printing preference you want to export and click **Export**. The **Save As** dialog box displays.
5. Choose the desired Save In directory, enter a name for the printing preference, and click **Save**. The file is saved in .xml format in the chosen directory and you return to the **Preferences** dialog box.

Importing a Paper Printing Preference

You can import a file that contains one or more print configurations.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Paper Printing**. The right side of the **Preferences** dialog box displays a list of the current paper printing preferences.
4. Click **Import**. The **Open** dialog box displays.
5. Select the .xml file for the preference you want to import and click **Open**. You return to the **Preferences** dialog box. The imported file is displayed in the list. If the imported setting has the same name as an existing one, "Import_" is prepended to the name.
6. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting iExport Preferences

The iExport tool enables you to export exams in DICOM format to another DICOM device, such as a DICOM printer or 3D imaging system. See ["iExport for DICOM Export" on page 348](#).

System Administrators can add or edit DICOM forwarding addresses that are visible in the **iExport** dialog box, accessed from the menu in the worklists, from the exams, or by clicking **Q** in the IntelliSpace PACS Control Strip.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **iExport**. The right side of the **Preferences** dialog box displays a list of the current remote host descriptions.
4. Click **Add**. The **Add iExport Remote SCP Configuration** dialog box displays.
5. In the **Remote Destination AETitle** field, enter the DICOM remote host to which you want to forward.
6. From the **Location Affinity** list, select the desired location where the iExport Service has been configured. These locations can be main and/or remote locations and each location can have multiple hosts where the iExport service is configured to run. The default **Location Affinity** is **Main Location**.
7. In the **Remote Host Description** field, enter a brief description of the remote DICOM device.
8. Enter the address of the **Host IP (IPv4)**.
9. In the **Port** field, enter the port number on which you want the request to take place.
10. In the **Max Concurrent Requests** field, enter the number of simultaneous associations that you want the receiving device to entertain.
11. Select the **Send Entire Study on Retry** check box if you want all exams in the study to be resent when an export has failed and is being retried.
12. Select the **Association Across Studies** check box if you want an association between the IntelliSpace PACS server and the receiving device to be kept open when multiple studies are being sent (instead of opening and closing a separate association for each study).
13. If the GID (Geographical Identification) feature is enabled on the IntelliSpace PACS server, the **Export GID** check box is available. Select this check box if you want the iExport Remote SCP Configuration to include the GID when using the iExport feature. See [“iExport for DICOM Export” on page 348](#).

NOTE

Global Identification (GID) is a unique patient identifier that will be required by several countries to define the unique identification of the patients.

14. Click **OK**. You return to the **Preferences** dialog box.
15. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Editing an iExport Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **iExport**. The right side of the **Preferences** dialog box displays a list of the current remote host descriptions.
4. Select the remote host description you want to edit and click **Properties**, or double-click the remote host description. The **Edit iExport Remote SCP Configuration** dialog box displays.
5. Make the desired changes and click **OK**. You return to the **Preferences** dialog box.
6. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting an iExport Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **iExport**. The right side of the **Preferences** dialog box displays a list of the current remote host descriptions.
4. Select the remote host description you want to delete and click **Delete**.
5. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting iQuery Preferences

System Administrators can add and edit iQuery preferences that allow users to import archived studies into the IntelliSpace PACS server for viewing with IntelliSpace PACS. See [“iQuery for DICOM Study Retrieval” on page 358](#).

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **iQuery**. The right side of the **Preferences** dialog box displays a list of the iQuery preferences.
4. Click **Add**. The **Add iQuery Remote SCP Configuration** dialog box displays.
5. Enter the **AE Title**, **Remote Host Description**, **Host IP (IPV4)**, and **Port**.
6. Select the **Preferred Query Model** from the list.
7. Select the **Close on Cancel** or **Merge Ark Compatibility** check boxes if desired.
8. Click **OK**. You return to the **Preferences** dialog box.

9. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Editing an iQuery Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **iQuery**. The right side of the **Preferences** dialog box displays a list of the iQuery preferences.
4. Select the archive you want to edit and click **Properties**, or double-click the archive. The **Edit iQuery Remote SCP Configuration** dialog box displays.
5. Make the desired changes.
6. Click **OK**. You return to the **Preferences** dialog box.
7. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting an iQuery Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **iQuery**. The right side of the **Preferences** dialog box displays a list of the iQuery preferences.
4. Select the archive you want to delete and click **Delete**.
5. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Plug-In Preferences

System Administrators can add, edit, or delete plug-in preferences. Plug-ins allow you to create links in the IntelliSpace PACS Folders List and Shortcuts Bar that point to other web interfaces' websites. For example, if your institution's lab results are available from an in-house server, you can display that server's interface in IntelliSpace PACS by creating a plug-in. System Administrators can name the plug-ins, enable them in different IntelliSpace PACS programs, and set security for them, if necessary.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Plug-Ins**. The right side of the **Preferences** dialog box displays a list of the current plug-ins, and allows to add, edit, or delete plug-ins.

4. Click **Add**. The **Plug-In** dialog box displays.
5. Enter a **Name** for the plug-in.
6. Select the **Visible in folder tree** check box if you want the plug-in to be visible in the IntelliSpace PACS Folder List. If the plug-in is not displayed, non-administrative users cannot see it in the Folder List.
7. Enter the URL for the plug-in.
8. Select whether you want the plug-in enabled in IntelliSpace PACS Enterprise, IntelliSpace PACS Radiology, or both.
9. If desired, clear the **Disable API** check box. Only clear this check box if you are sure that the plug-in URL supports the IntelliSpace PACS Application Program Interface (API). Philips recommends leaving this check box selected.
10. Select the **Requires Security Code** check box and select a code from the list if you only want users with specific security to be able to access the plug-in.
11. Click **OK**. You return to the **Preferences** dialog box.
12. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Editing a Plug-In Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Plug-Ins**. The right side of the **Preferences** dialog box displays a list of the current plug-ins, and allows to add, edit, or delete plug-ins.
4. Select the plug-in you want to edit and click **Properties**, or double-click the plug-in. The **Plug-In** dialog box displays.
5. Change the plug-in settings as desired.
6. Click **OK**. You return to the **Preferences** dialog box.
7. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting a Plug-In Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Plug-Ins**. The right side of the **Preferences** dialog box displays a list of the current plug-ins, and allows to add, edit, or delete plug-ins.
4. Select the plug-in you want to delete and click **Delete**.
5. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting DICOM Print Preferences

System Administrators can set DICOM Print preferences to control the printers to which exams and images are printed from IntelliSpace PACS Radiology. You first define, then configure, the DICOM printer. You also specify the overlay text for images output on a DICOM printer.

NOTE

IntelliSpace PACS System Administrators can configure DICOM printing preferences in IntelliSpace PACS Enterprise for troubleshooting, but the feature itself is only available in IntelliSpace PACS Radiology.

Adding DICOM printers is a complex task involving multiple steps. Therefore, the instructions have been divided into the following high-level steps:

- [“Defining a DICOM Printer” on page 496](#)
- [“Defining DICOM Printer Configuration” on page 498](#)
- [“Configuring Life-Size Printing” on page 499](#)



WARNING

- You must obtain information and assistance from the printer vendor to properly configure and validate your DICOM Print settings.
- Philips strongly recommends that you ask for assistance from your printer vendor when configuring the life Size Printing option for a specific printer, and that you validate the correctness of the configuration by verifying that the output is indeed printing life-sized, after completing the configuration.

Defining a DICOM Printer

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **DICOM Print**. The right side of the **Preferences** dialog box displays a list of the DICOM Print settings and allows to add, edit, delete, export, or import print settings.
4. Click **Add**. The **Add DICOM Printer Definition** dialog box displays.
5. In the **Name** field, enter the printer definition name (for example, CR_PRINTER).
6. In the **Location** field, enter the physical location of the printer (for example, Lab).
7. In the **AE Title** field, enter the AE Title of the printer (for example, FUJI_PRINTER). Note that this field is case-sensitive.
8. In the **IP Address** field, enter the IP address of the printer (for example, 10.2.0.168).

9. In the **Response Timeout** field, enter the number of seconds for the response timeout (for example, 60).
10. In the **Port** field, enter the DICOM port for the printer (for example, 104).
11. Click **Ping** to test communication with the printer. If the communication is good, the printer should return “Ping to the Server is Successful.” If you mistype the AE Title, Port, or if there is not physical (IP) connectivity between the Radiology workstation and the printer, an error message displays.
12. Select “**Secure Connection**” to enable Secure DICOM Printing:

NOTE

The configured Printer must have the PACS Server certificate installed before this option is selected.

- On selecting Secure DICOM Printing, the “**Use Client Certificate**” option gets activated.
- If you choose to use a certificate from the local system, select the **Use Client Certificate** option to select a certificate of your choice.

NOTE

Select the “Client Certificate” option only if the configured printer is capable of authenticating the certificate in the PACS Client.

- Click on the **Certificate** button to select a certificate.

NOTE

Ensure that the “Personal” folder under “Certificates” in the local system contains the certificates.

- The **Select a Certificate** window opens listing the available certificates.
- Select a certificate and click **OK**.

NOTE

In case if the certificate has expired/revoked or invalid.. the user can still continue to print by configuring the settings in iSiteweb.

1. After communication with the printer is established, click **Add** to add the new configuration. The **Add DICOM Printer Configuration** dialog box displays. Continue to [“Defining DICOM Printer Configuration” on page 498](#).

Defining DICOM Printer Configuration

1. In the **Name** field of the **Add DICOM Printer Configuration** dialog box, enter a meaningful name for the configuration. The name should include layout, location of printer, and modality type. (for example 3 x 4 - US - Film Room (Agfa) or 1 x 1 Portrait).
2. In the **FilmBox Settings** fields, set the following:
 - In the **Image Display Format** field, select a format from the DICOM printer configuration table (for example, STANDARD\3.4).
 - In the **FilmSize ID** field, select the film size from the DICOM printer configuration table (for example, 8INX10IN).
 - In the **Medium Type** field, select the medium type from the DICOM printer configuration table (for example, PAPER).
 - The **Printer Configuration** field is taken from the printer conformance statement. If not specified, the printer uses its default settings (for example, PRESENTATION_LUT=300).
3. Set the **Min Density** and **Max Density** fields from the DICOM printer configuration table.
4. Set the **Orientation** to **Landscape** or **Portrait**.
5. Select the **Life Size Printing** check box if desired. See [“Configuring Life-Size Printing” on page 499](#).
6. To configure the overlay for DICOM printing, click **Overlay**. The **Overlay** dialog box displays the available overlay options and a default overlay. You can add a total of 50 overlays to images, meaning approximately 12 overlay items per corner. A line can contain multiple overlays (for example, name and sex on a single line).
7. Enter a name for the overlay. The name must correspond to a modality that sends images to IntelliSpace PACS (for example, CR or US).
8. Select the desired overlay text from the tree control on the right side of the **Overlay** dialog box, and drag it to the screen mockup on the left side. Remove overlay text by selecting and dragging it off the screen mockup. You can only place overlay text on one of the screen's corners, not in the center of the image. Selected overlays are outlined with a red box.
9. Click **Font** if you want to change the display font for images printed on a DICOM printer. The **Font** dialog box displays. Select a font from the list and click **OK**. You return to the **Overlay** dialog box.
10. You can double-click overlay text in the screen mockup to view the DICOM tag for that text. To add a custom DICOM tag, double-click an overlay field and enter the new **Name** and **Value** in the **Tag Edit** dialog box. The value corresponds to the DICOM metadata field which carries the information in question. For image number, always use the DICOM Tag-Image Number - 0020,0013. Click **OK** when you are done.
11. Click **OK**. You return to the **Add DICOM Printer Configuration** dialog box.

12. Click **OK**. You return to the **Add DICOM Printer Definition** dialog box. The configuration you added is listed in the **Configuration** section of the dialog box.
13. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Configuring Life-Size Printing



WARNING

- Philips strongly recommends that you ask for assistance from your printer vendor when configuring the life Size Printing option for a specific printer, and that you validate the correctness of the configuration by verifying that the output is indeed printing life-sized, after completing the configuration.
 - To verify the correctness of the life size printing settings provided by the printer vendor, Philips recommends that you first perform a CR exam of an object with known size, then print the exam from IntelliSpace PACS, and finally print directly from the CT scanner in order to verify accuracy of the life size print. Measurements performed on both films, from IntelliSpace PACS and directly off of the CT scanner, should be the same as the original known object size.
1. Fill in the fields in the **Add DICOM Printer Configuration** dialog box, as described in [“Defining DICOM Printer Configuration” on page 498](#)
 2. Select the **Life Size Printing** check box. The following message displays “For accurate life size printing, the ImageBox height/width settings must be obtained and verified from the printer vendor.” Click **OK** to clear the message. Note the following:
 - IntelliSpace PACS can be configured (on a printer-by-printer basis) to enter the maximum printable height and width of the film (information to be provided by the printer vendor).
 - IntelliSpace PACS does the rendering before sending the image to the printer.
 - IntelliSpace PACS uses the imager pixel spacing (0018,1164) divided by the estimated radiographic magnification factor (0018,1114), if both are present and the value of 18,1114 is not 1 or 0.
 3. In the **Image Box Height** and **Image Box Width** fields, enter the values in millimeters provided by the printer vendor, based on the desired orientation (**Landscape** or **Portrait**).
 4. Follow steps 5 to 12 in the procedure “To define DICOM printer configuration.” See [“Defining DICOM Printer Configuration” on page 498](#).
 5. Note that you need to add separate configurations if you intend to print images from multiple modalities, or if the same modality uses different image display formats, film sizes, or medium types.

Editing a DICOM Printer

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **DICOM Print**. The right side of the **Preferences** dialog box displays a list of the DICOM Print settings.
4. Select the printer you want to edit and click **Properties**, or double-click the printer. The **Edit DICOM Printer Definition** dialog box displays.
5. Make the desired edits to the **Name**, **Location**, **AE Title**, **IP Address**, **Response Timeout**, **Port** or **Secure Connection**.
6. Click **Ping** to test communication with the printer. If the communication is good, the printer should return "Ping to the Server is Successful." If you mistype the AE Title, Port, or if there is not physical (IP) connectivity between the Radiology workstation and the printer, an error message displays.
7. After communication with the printer is established, select the name of the configuration you want to edit and click **Properties**. The **Edit DICOM Printer Configuration** dialog box displays.
8. Make the desired edits to the **Name**, **FilmBox Settings (Image Display Format, FilmSize ID, Medium Type, Printer Configuration, Min Density, Max Density)** or **Orientation** fields.
9. To configure life size printing, see ["Configuring Life-Size Printing" on page 499](#).
10. To configure the overlay for DICOM printing, click **Overlay**. The **Overlay** dialog box displays the available overlay options and a default overlay. You can add a total of 50 overlays to images, meaning approximately 12 overlay items per corner. A line can contain multiple overlays (for example, name and sex on a single line).
11. Click **OK**. You return to the **Edit DICOM Printer Definition** dialog box. The configuration you edited is listed in the **Configuration** section of the dialog box.
12. Do the following:
 - Select the desired overlay text from the tree control on the right side of the **Overlay** dialog box, and drag it to the screen mockup on the left side. Remove overlay text by selecting and dragging it off the screen mockup. You can only place overlay text on one of the screen's corners, not in the center of the image. Selected overlays are outlined with a red box.
 - Click **Font** if you want to change the display font or font size for images printed on a DICOM printer. The **Edit Font** dialog box displays. Select the desired font and size from the list and click **OK**. You return to the **Overlay** dialog box
 - You can double-click overlay text in the screen mockup to view the DICOM tag for that text. To add a custom DICOM tag, double-click an overlay field and enter the new **Name** and **Value** in the **Tag Edit** dialog box. The value corresponds to the DICOM metadata field which carries the information in question. For image number, always use the DICOM Tag-Image Number - 0020,0013. Click **OK** when you are done.
 - Click **OK**. You return to the **Edit DICOM Printer Configuration** dialog box.

13. Click **OK**. You return to the **Preferences** dialog box.
14. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting a DICOM Printer

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **DICOM Print**. The right side of the **Preferences** dialog box displays a list of the DICOM Print settings and allows to add, edit, delete, export, or import print settings.
4. Select the printer you want to delete and click **Delete**.
5. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Exporting a DICOM Printer

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **DICOM Print**. The right side of the **Preferences** dialog box displays a list of the DICOM Print settings and allows to add, edit, delete, export, or import print settings.
4. Select the printer you want to export and click **Export**. The **Save As** dialog box displays.
5. Choose a **Save In** directory and a name for the exported file and click **Save**. The file is saved in .xml format in the chosen directory.
6. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Importing a DICOM Printer

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **DICOM Print**. The right side of the **Preferences** dialog box displays a list of the DICOM Print settings and allows to add, edit, delete, export, or import print settings.
4. Click **Import**. The **Open** dialog box displays.
5. Select the .xml file you want to import and click **Open**. The file is added to the list in the **Preferences** dialog box.
6. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Workflow Preferences

Workflow refers to the type of screening specified for reading a mammography exam. If the exam description contains a specific descriptive text (tag), IntelliSpace PACS automatically labels and associates this exam with screening. The exact tag is defined during installation, and can be modified via the Preferences dialog box in both IntelliSpace PACS Enterprise and IntelliSpace PACS Radiology.

For more information about Workflow, see [“Workflow Overview” on page 425](#).

NOTE

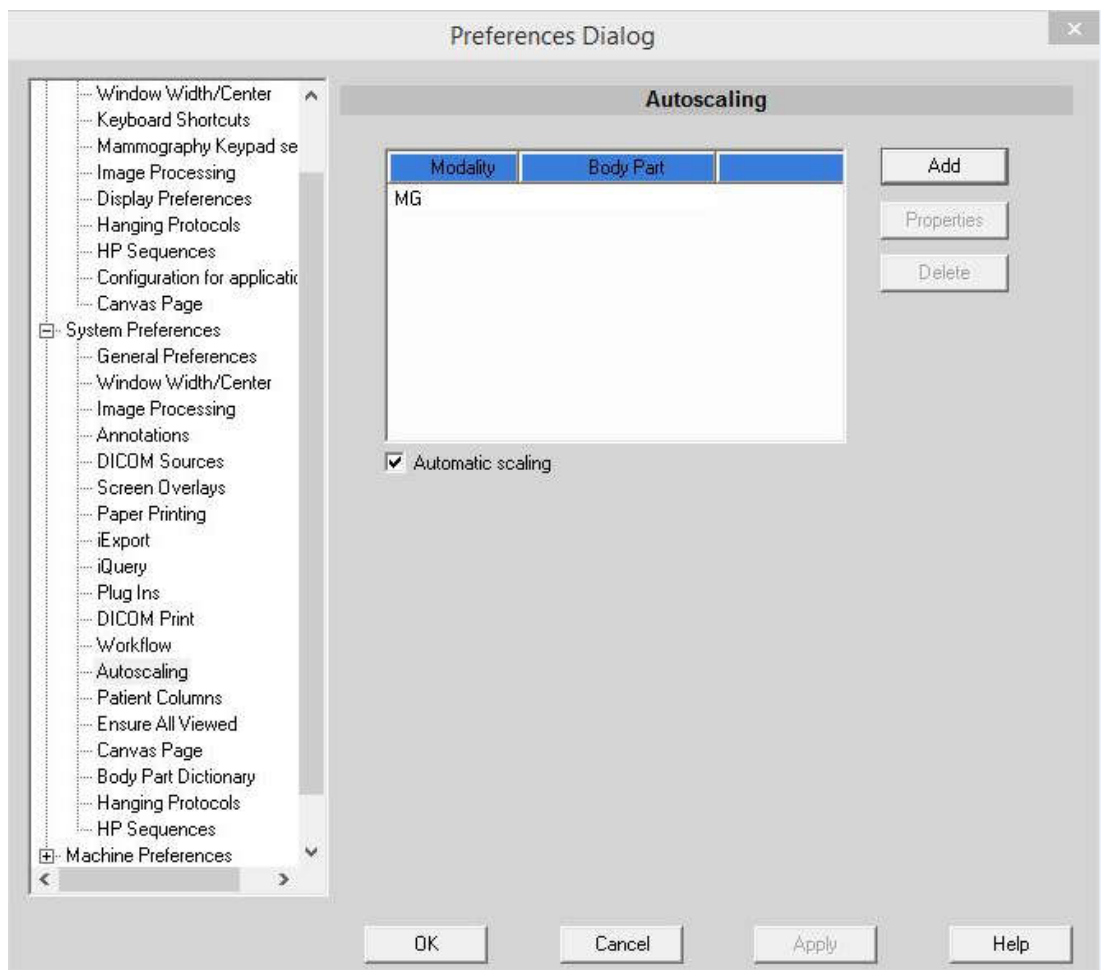
This preference is only displayed if the Advanced Mammography Features are enabled on the server.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Workflow**. The right side of the Preferences dialog box displays the Workflow preferences, where you can set the Screening criteria for an exam.
4. In the **Exam description** text box, enter a description of the exam you are setting the Screening criteria for.
5. Select either **Single** (single read) or **Double** (double-blind read) for the Type of reading you want.
6. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

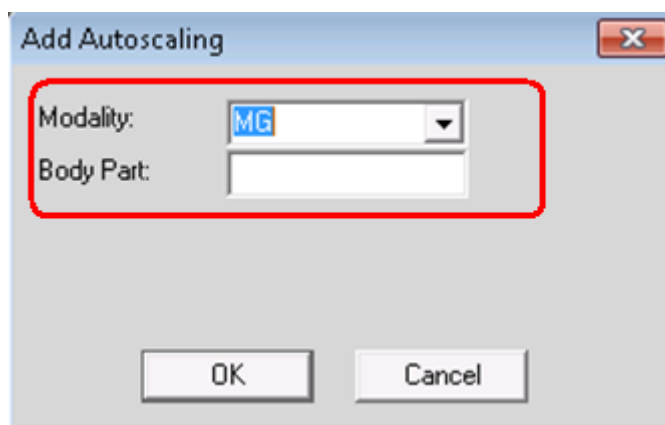
Setting Autoscaling Preferences

This preference specifies whether current and prior cases should be scaled equally to simplify comparisons.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Autoscaling**. The right side of the Preferences dialog box displays the Autoscaling preferences.



4. Click **Add**, which opens the **Add Autoscaling** dialog, where you can specify the Modality and Body Part.



5. Click the **Modality:** dropdown arrow and select the modality from the dropdown list and then type in the body part as follows. Note that MG and DX are typical mammography modality types, while CR and DR are generic so the body part is required to differentiate them from other x-ray images.

- Modality: MG
 - Modality: CR and Body Part: breast
 - Modality: DR and Body Part: breast
 - Modality: DX
6. Click **OK** to close the Add Autoscaling dialog.
 7. Select on the “Apply Autoscaling” to apply autoscaling automatically
 8. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Editing an Autoscaling Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Autoscaling**. The right side of the Preferences dialog box displays the Auto Scaling preferences.
4. Select an existing Autoscaling preference from the list and click **Properties**. The **Edit Autoscaling** dialog displays.
5. Make the changes to the **Modality:** and **Body Part:** settings and click **OK**.
6. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

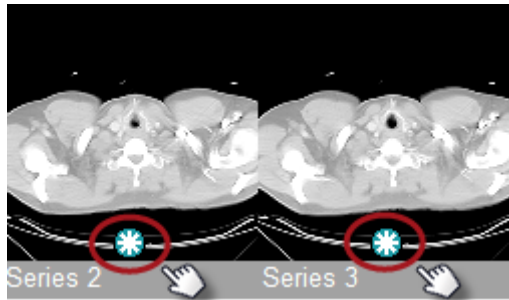
Deleting an Autoscaling Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Autoscaling**. The right side of the Preferences dialog box displays the Autoscaling preferences.
4. Select an existing Autoscaling preference from the list and click **Delete**. The Autoscaling preference is removed from the list.
5. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Ensure All Viewed Preference

The Ensure All Viewed preference is used to identify series/single image (in an unread selected exam) that have not been displayed on the diagnostic monitor. After the preference is properly configured, an asterisk (snow flakes) at the bottom of a thumbnail on the Canvas Page indicates

that the series/single image represented by the thumbnail have not been displayed even once on the diagnostic monitor (excluded are thumbnails that represent collections, key images, captured images, or clones).



When the series/single image is displayed once on the diagnostic monitors, the asterisk at the bottom of a thumbnail on the Canvas Page is not seen for that canvas page session.

Adding Ensure All Viewed Setting

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Ensure All Viewed**. The right side of the Preferences dialog box displays a list of modalities and body parts.
4. Click Add.
5. In the Add Ensure All Viewed dialog box, select the Modality and optionally enter the name of the Body Part. The system logs image series that have not been displayed on the diagnostic monitors.
6. Click OK to close the Add Ensure All Viewed dialog box.
7. Click Apply to save the settings and continue to set other preferences. Click OK to save your changes and close the Preferences dialog box.

NOTE

The body part you enter in the preference must already exist in the Body Part dictionary.

Editing Ensure All Viewed Setting

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Ensure All Viewed**. The right side of the Preferences dialog box displays a list of modalities and body parts.

4. Select the item in the list that you want to edit and click Properties. The **Edit Ensure All Viewed** dialog box opens.
5. In the Edit Ensure All Viewed dialog box, select the Modality and optionally enter the name of the Body Part. The system logs image series that have not been displayed on the diagnostic monitors.
6. Click **OK** to close the **Edit Ensure All Viewed** dialog box.
7. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the Preferences dialog box.

NOTE

The body part you enter in the preference must already exist in the Body Part dictionary.

Deleting Ensure All Viewed Setting

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the + sign next to System Preferences. The list of available system preferences displays.
3. Click **Ensure All Viewed**. The right side of the Preferences dialog box displays a list of modalities and body parts.
4. Select the item in the list that you want to delete and click **Delete**. The item is removed from the list.
5. Click **OK** to close the Preferences dialog box.

Setting Canvas Page Preferences

You can specify preferences for the patient information area of the IntelliSpace PACS Radiology Canvas Page.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Canvas Page**. The right side of the **Preferences** dialog box displays the available preferences.
3. Select the check boxes for the preferences you wish to set in the **Patient Information Area** :
 - **Address**
 - **Date of Death (D.O.D)**
 - **Age**
 - **Gender**
 - **Geographical Identifier**

4. Click **Apply** to save the settings and continue setting other preferences. Click **OK** when you are done.

Setting View Older Study Warning

The **View Older Study Warning** option lets you to set a time period beyond which a warning message will be displayed when a study older than the set day(s) is being opened as the current study in the Canvas page.

To configure the View Older Study Warning follow these steps:

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Expand the **System Preference** in the **Preferences Dialog** and select **View Older Study Warning** menu.

The View Older Study Warning options preference on the right side:

By default the **Enable warning for viewing older studies in days** option is not selected.

View Older Study Warning

☐ Enable warning for viewing older studies in days

Default Day(s)

Modality

CR	Day(s)	NM	Day(s)
CT	Day(s)	PT	Day(s)
DR	Day(s)	RF	Day(s)
DX	Day(s)	US	Day(s)
MG	Day(s)	XA	Day(s)
MR	Day(s)		

If Enable option is unchecked, no warning will appear.
 If Enable option is checked, a warning will be displayed in the canvas page if the study exceeds the number of days entered for the specific modality.
 Value in the "Default" field in this dialog will be applicable for the Modalities for which value is not configured.

OK Cancel Apply Help

3. Select the **Enable warning for viewing older studies in days** to set the time period for warning the user that the study may not be the current study.
4. Enter the day(s) in the **Default** field beyond which an error message will be displayed when opening a study.

NOTE

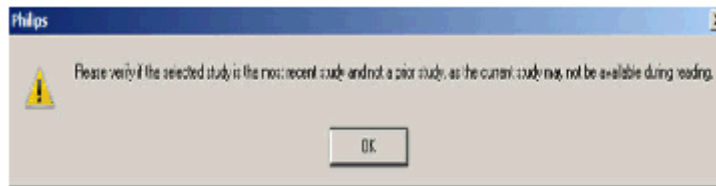
Enter only integers from 1 to 999. An error message is displayed on entering any other values and a red star is displayed in the erroneous field.

NOTE

For any modality, if the day(s) are not configured, then the warning message will be shown based on the value as set in the “Default” field. And, if the Default value is not configured, then the warning will not be shown for the modalities that does not have the values set.

5. Enter the day(s) for the modalities in the **Modality** region to individually assign day(s) for modalities beyond which the error message should display when opening a study.

For example, if the day(s) configured for the CT is 3 days, and when you open study which is older than 3 days, then an warning message is displayed:



Setting Body Part Preferences

The **Body Part** preference lets you equate one body part to one or more body parts to associate the body parts for determining relevant prior exams based on body part. For example, if you have a CT Head and you want MR Brain to be a relevant prior exam you can define the body part “Head” to be equivalent to “Brain.” If this is configured properly, both the main exam and the relevant prior exams are hung together for comparison.

For mammography, make sure that “breast” is added as a name.

The body parts you enter in the preference must already exist in the **Body Part** dictionary.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the + sign next to System Preferences. The list of available system preferences displays.
3. Click **Body Part Dictionary**.
4. Click **Add**. The **Add Body Part Dictionary** dialog box opens.
5. In the **Name** field, enter the main body part for which you want to define equivalents. (The **Name** field is case-sensitive).
6. In the **Equivalents** field, enter the names of the body parts you want to be associated with the main body part, separated by a comma.
7. Click **OK**.
8. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

For mammography, make sure you add “breast” in the Name field and “mammo” or “mammography” in the Equivalents field.

Editing a Body Part

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Body Part Dictionary**.
4. Select the body part you want to edit and click **Properties**. The **Edit Body Part Dictionary** dialog box opens.
5. Review or edit the following information:
 - In the **Name** field, enter the main body part for which you want to define equivalents. (The **Name** field is case-sensitive).
 - In the **Equivalents** field, enter the names of the body parts you want to be associated with the main body part, separated by a comma. (The **Equivalents** field is case-sensitive).
6. Click **OK** to close the **Edit Body Part Dictionary** dialog box.
7. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting a Body Part

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Body Part Dictionary**.
4. Select the body part you want to delete and click **Delete**.
5. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting System Hanging Protocol Preferences

You set view, delete, import, or export System hanging protocols from the **Preferences** dialog box. You can only add hanging protocols from the IntelliSpace PACS Radiology Canvas Page. See [“Using Hanging Protocols” on page 365](#).

Hanging Protocols determine how certain exams (for example, a certain modality and/or body part) are hung when displayed in diagnostic monitors. You can set the monitor mode to one of over ten different configurations. Associating the monitor mode with the modality and body part that you have specified insures that exams of that type are always hung in the desired fashion.

Viewing a Hanging Protocol

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.

2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Hanging Protocols**. The right side of the **Preferences** dialog box displays a list of hanging protocol options.
4. Select the hanging protocol you want to view and click **Properties**, or double-click the hanging protocol. The **System Hanging Protocol** dialog box opens.
5. Review the information on the first screen and click **Next** to view more settings.
6. When you have finished reviewing the information, click **Next** two more times (viewing more information on the hanging protocol) and then click **Finish**. You return to the **Preferences** dialog box.

Deleting a Hanging Protocol

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Hanging Protocols**. The right side of the **Preferences** dialog box displays a list of hanging protocol options.
4. Select the hanging protocol you want to delete and click **Delete**.
5. Click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Exporting a Hanging Protocol

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Hanging Protocols**. The right side of the **Preferences** dialog box displays a list of the current hanging protocols, and allows you to view, delete, export, or import hanging protocols.
4. Select the hanging protocol you want to export and click **Export**. The **Save As** dialog box opens.
5. Enter a name for the hanging protocol, choose the **Save In** directory, and click **Save**. The file is saved in .xml format in the chosen directory and you return to the **Preferences** dialog box.
6. Click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Importing a Hanging Protocol

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.

2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Hanging Protocols**.
4. Click **Import**. The **Open** dialog box opens.
5. Select the .xml file for the hanging protocol you want to import and click **Open**. You return to the **Preferences** dialog box.
6. Click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting System Hanging Protocol Sequences

After User or System hanging protocols have been configured, you can define the sequence in which they are displayed.

You can view and delete configured hanging protocol sequences from the System preferences. Note that you can only add or edit hanging protocol sequences from the IntelliSpace PACS Radiology Canvas Page. See [“Configuring Hanging Protocol Sequences” on page 406](#).

Viewing a Hanging Protocol Sequence

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **HP Sequences**. The right side of the **Preferences** dialog box displays a list of hanging protocol sequences.
4. Select the hanging protocol sequence you want to view and click **Properties**. The **HP Sequence** dialog box opens.
5. Review the information.
6. When you have finished reviewing the information, click **OK**. You return to the **Preferences** dialog box.

Deleting a Hanging Protocol Sequence

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **HP Sequences**. The right side of the **Preferences** dialog box displays a list of hanging protocol sequences.
4. Select the hanging protocol sequence you want to delete and click **Delete**.
5. Click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Patient Columns Preferences

This **Patient Columns** preference allows the PACS administrator to select whether the following columns will be available for display in the **Patient Lookup**:

- Organization
- Sex
- SSN (see Note below)

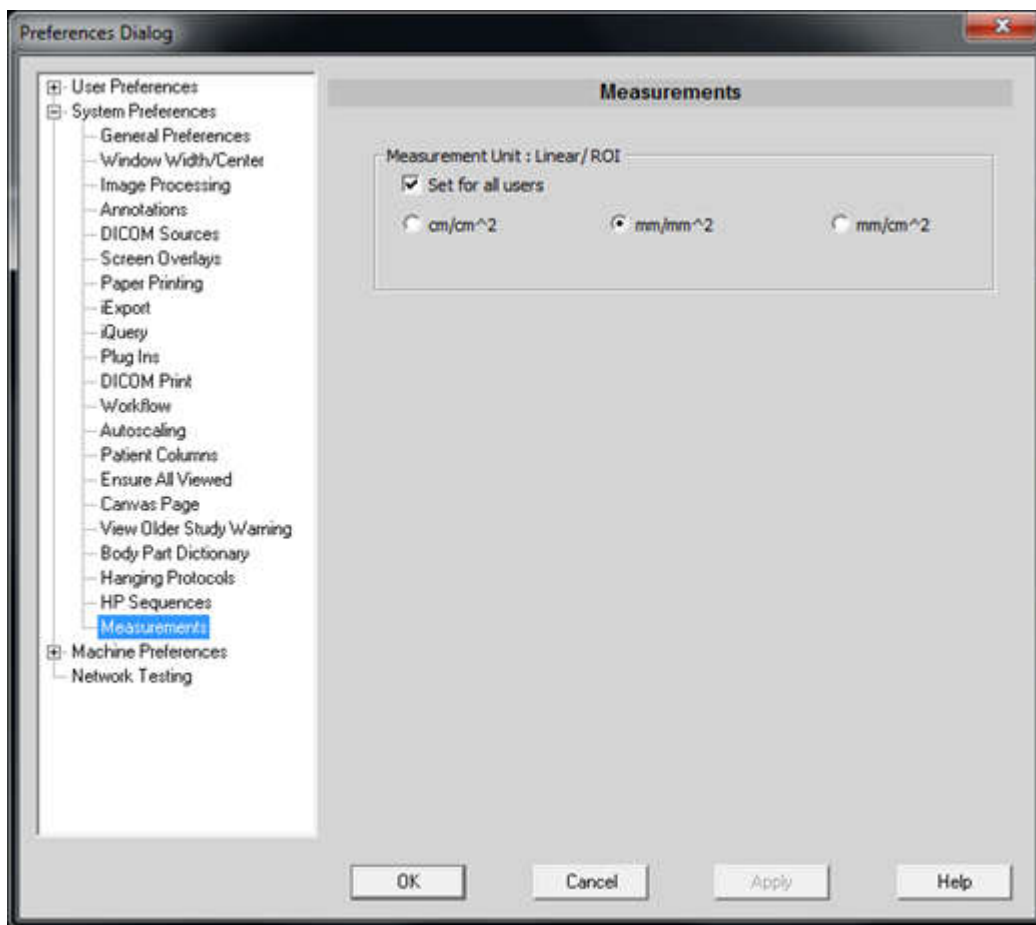
NOTE

If the GID (Geographical Identification) feature is enabled on the IntelliSpace PACS server, the SSN field is replaced with the GID field. The GID (Geographical Identification) is a unique patient identifier that will be required by several countries to define the unique identification of the patients.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to System Preferences. The list of available system preferences displays.
3. Click **Patient Columns**. The right side of the **Preferences** dialog box displays a list of patient columns. By default, **Sex**, **Organization**, and **SSN** are in the **Visible** list (meaning that they are displayed in the Patient Lookup).
4. Select the patient column(s) you do not want to display and click the left arrow to move those columns into the **Available** list. These columns will not be displayed in the Patient Lookup.
5. Click **Apply** to save the settings and continue setting other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Measurement Preferences

The **Measurements** preference allows the PACS administrator to set the **Measurement Unit** : **Linear / ROI** values:



The PACS administrator can either set the measurement unit for the linear and ROI measurements or allow the users to set their own values.

To set measurement values follow these steps:

1. Select **Set for all users** check box (will be selected by default).
The measurement options will be enabled on selecting **Set for all users** check box.
2. Do one of the following:
 - Select **cm/cm²** to set the Linear measurement unit to centimeters and ROI measurement unit to centimeters square:
 - Select **mm/mm²** to set the Linear measurement unit to millimeters and ROI measurement unit to millimeters square
 - Select **mm/cm²** to set the Linear measurement unit to millimeters and ROI measurement unit to centimeters square
3. Click **Apply** and then **OK**.

To allow the users to set their own measurement values follow these steps:

1. Unselect the **Set for all users** check box.
The measurement options will be disabled.

2. Click **Apply** and then **OK**.

Follow the steps detailed in the [“Setting Measurements” on page 467](#) section to set the measurement values.

23 Setting Machine Preferences

System Administrators can set preferences to customize the IntelliSpace PACS environment for individual needs and work habits. There are two types of preferences System Administrators can set:

- Systems preferences that affect every user. See [“Setting System Preferences” on page 471](#).
- Machine preferences for settings related to the machine on which you are currently working.

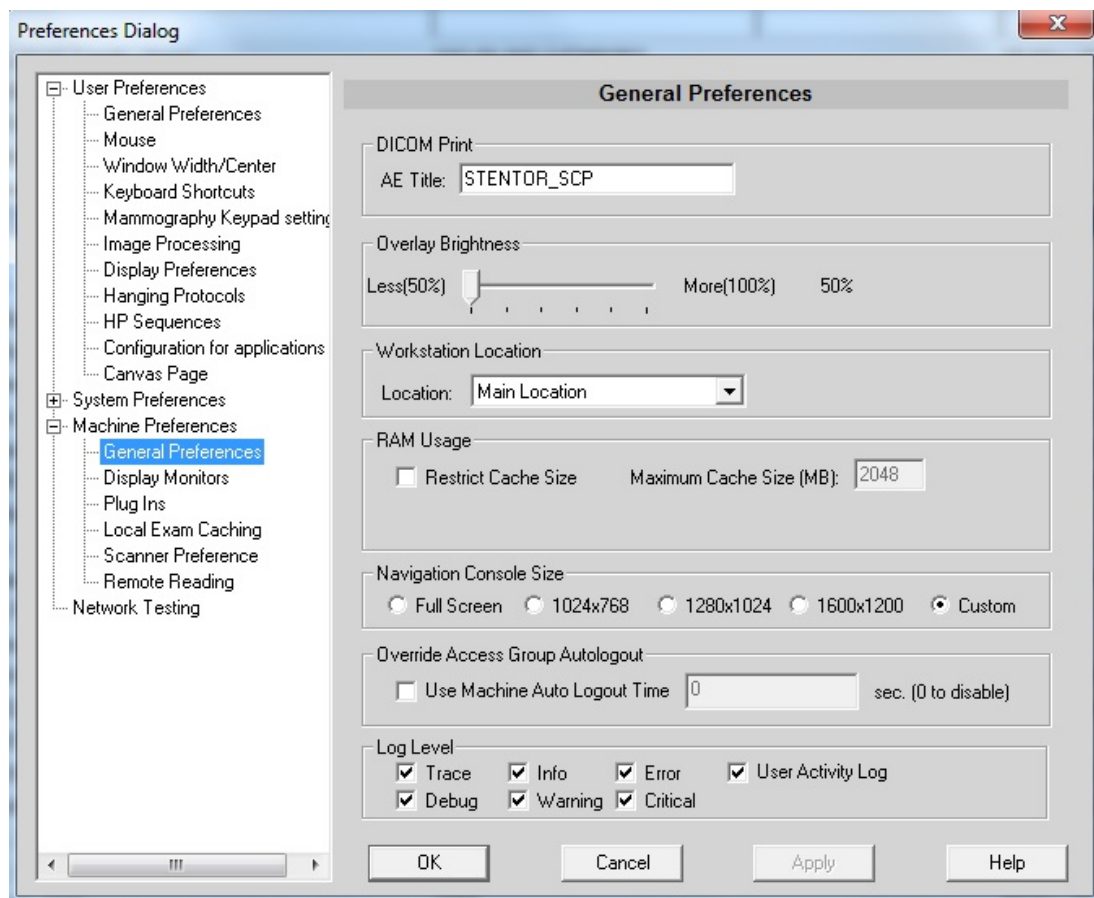
System Administrators can set the following Machine preferences:

- **General Preferences:** See [“Setting General Preferences” on page 517](#)
- **Display Monitors:** See [“Setting Display Monitor Preferences” on page 519](#)
- **Plug-Ins:** See [“Setting Plug-In Preferences” on page 520](#)
- **Local Exam Caching:** See [“Setting Local Exam Caching Preferences” on page 522](#)
- **Scanner Preference:** See [“Setting Scanner Preferences” on page 523](#)
- **Remote Reading:** See [“Setting Remote Reading Preferences” on page 523](#)
- **IntelliSpace PACS Chat\Mail Management:** [“Setting IntelliSpace PACS Chat\Mail Management Preferences” on page 525](#)
- **Network Testing:** See [“Setting Network Testing Preferences” on page 526](#)

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. In the **Preferences** dialog box, click the **+** sign to display the list of Machine Preferences.
3. Set the desired machine preferences.
4. Click **Apply** to set a preference and continue setting machine preferences. Click **OK** when you are done.

Setting General Preferences

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to Machine Preferences. The list of available machine preferences displays.
3. Click **General Preferences**. The right side of the **Preferences** dialog box displays the general preference options.



4. In the **AE Title** field of the **DICOM Print** area, enter the AE Title for the printer used to print images to film for this machine.
5. In the **Overlay Brightness** slider, adjust the brightness of image overlays displayed over diagnostic images. For the most visible overlays, set the slider to **More (100%)**.
6. In the **Location** list of the **Workstation Location** area, click the dropdown arrow and select the location of the machine, as seen in the **Login** dialog box.
7. In the **Ram Usage** area, select the **Restrict Cache Size** check box to restrict the RAM cache size used by IntelliSpace PACS.
 Note that for Client upgrades where **Restrict Cache Size** is checked, the default cache size will not automatically change to the new default value.
8. Enter a **Maximum Cache Size**. This text box is only enabled if **Restrict Cache Size** is checked. The valid range is 256MB to 1.2GB for a 2GB or higher system, and half the physical RAM size for systems that have less than 2GB of RAM. This is used to allow memory to be utilized by other memory intensive applications.
9. Select the **Navigation Console Size** to control the size of the IntelliSpace PACS Radiology operations panel. If you set the size to anything but **Full Screen**, IntelliSpace PACS Radiology displays an icon that allow you to minimize the application. Changes take effect the next time someone logs into IntelliSpace PACS Radiology from your workstation.

10. In the Override Access Group Autologout section, select the **Use Machine Auto Logout Time** check box to override the system-wide auto logout for the machine you are working on. You can then set a new auto logout value in seconds. Set the seconds settings to **0** if you do not want the machine to ever automatically log out.
11. In the **Log Level** area, select the options to create the corresponding log files.
12. User can enable/disable capturing the User Activity by using **User Activity Log** option. If this option is enabled, a new log will be created to track the user actions. The logs are available in the following location: %PUBLIC%\Philips\<majorVersion.minorVersion>\UserActivityLogs (Windows 7).
13. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

User can enable/disable capturing the User Activity by using **User Activity Log** option. If this option is enabled, a new log will be created to track the user actions. The logs are available in the following location: %PUBLIC%\Philips\<majorVersion.minorVersion>\UserActivityLogs (Windows 7) or %ALLUSERSPROFILE%\Application Data\Philips\<majorVersion.minorVersion>\UserActivityLogs (Windows XP).

Setting Display Monitor Preferences

System Administrators can set preferences to configure the dimensions of the diagnostic monitors attached to the machine. These dimensions are used in the calibration for the Display Preferences (under User preferences) including the font size and image overlay size. See [“Setting Display Preferences” on page 460](#).

NOTICE

The image overlay font size automatically resizes according to the monitor resolution and screen layout. This makes the information readable for the user. The minimum font size the screen overlay can be resized is 14 pt. The font size will be calculated based on the monitor resolution, and the resizing of the font will depend on the monitor resolution.

For mammography, you need to optimize the display setting if high-resolution 5MP mammography monitors are connected to the client machine, in order to keep the font sizes of screen overlays and menu items readable. In addition, enable the True Size display option: display size on screen = the size on the detector. Select the following settings for mammo:

- Select **5MP image monitor** as the display monitor.
- Set **Medium Font** size to **29** (or whatever is convenient).
- Set **image menu font** to **29** (or whatever is convenient).
- Set **Pixel Pitch** to **0.165** (this depends on the monitor, so check the manufacturer’s instructions).

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.

2. Click the **+** sign next to Machine Preferences. The list of available machine preferences displays.
3. Click **Display Monitors**. The right side of the **Preferences** dialog box displays options for the display monitor(s). If there is more than one monitor, select the first monitor you want to configure from the **Display Monitor** list. The **Resolution** for the selected monitor displays.
4. If you plan to use the True Size zoom preset, select the **Pixel Pitch** of the Diagnostic Monitor by clicking the drop-down arrow. See [“Configuring Pixel Pitch for the Diagnostic Monitor” on page 58](#).
5. Set the font sizes for **Small Font**, **Medium Font**, **Large Font**, or **Image Menu** font. These font sizes are used for overlays.
6. Set the **Measurement Text Size**. This preference sets the font size for measurement values so that measurements values are can be adjusted for different monitor resolutions.
7. Select the **Monitor Functions** from the list. To designate a monitor as your Navigation Console, highlight that monitor and select **ROP** (Radiology Operations Panel) from the **Monitor Functions** list. Select **Diagnostic** for medical grade diagnostic monitors for image review.
8. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.
9. To configure another monitor, select it from the **Display Monitors** list.
10. Continue to configure monitors as desired.
11. Select **Divide high resolution monitors** check box to split the monitors above 5 MP. This check box will be available only for monitors above 5 MP

Important

If the "Divide high resolution monitors" check box is not selected, then the high resolution monitors beyond 5 MP will not be split and will remain as single monitor.

12. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Plug-In Preferences

System Administrators can add, edit, or delete plug-in preferences. Plug-ins allow you to create links in the IntelliSpace PACS Folders List and Shortcuts Bar that point to other web interfaces' websites. For example, if your institution's lab results are available from an in-house server, you can display that server's interface in IntelliSpace PACS by creating a plug-in. System Administrators can name the plug-ins, enable them in different IntelliSpace PACS programs, and set security for them, if necessary.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.

2. Click the **+** sign next to Machine Preferences. The list of available machine preferences displays.
3. Click **Plug-Ins**. The right side of the **Preferences** dialog box displays a list of the current plug-ins, and allows you to add, edit, or delete plug-ins.
4. Click **Add**. The **Plug-In** dialog box displays.
5. Enter a **Name** for the plug-in.
6. Select the **Visible in folder tree** check box if you want the plug-in to be visible in the IntelliSpace PACS Folder List. If the plug-in is not displayed, non-administrative users cannot see it in the Folder List.
7. Enter the URL for the plug-in.
8. Select whether you want the plug-in enabled in IntelliSpace PACS Enterprise, IntelliSpace PACS Radiology, or both.
9. If desired, clear the **Disable API** check box. Only clear this check box if you are sure that the plug-in URL supports the IntelliSpace PACS Application Program Interface (API). Philips recommends leaving this check box selected.
10. Select the **Requires Security Code** check box and select a code from the list if you only want users with specific security to be able to access the plug-in.
11. Click **OK**. You return to the **Preferences** dialog box.
12. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Editing a Plug-In Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to Machine Preferences. The list of available machine preferences displays.
3. Click **Plug-Ins**. The right side of the **Preferences** dialog box displays a list of the current plug-ins, and allows you to add, edit, or delete plug-ins.
4. Select the plug-in you want to edit and click **Properties**. The **Edit Plug-In** dialog box displays.
5. Change the plug-in settings as desired.
6. Click **OK**. You return to the **Preferences** dialog box.
7. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Deleting a Plug-In Preference

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to Machine Preferences. The list of available machine preferences displays.

3. Click **Plug-Ins**. The right side of the **Preferences** dialog box displays a list of the current plug-ins, and allows you to add, edit, or delete plug-ins.
4. Select the plug-in you want to delete and click **Delete**.
5. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Local Exam Caching Preferences

System Administrators can modify the supplied settings for the local exam cache. The **Local Exam Cache** folder in the **Folder List** allows you to cache patient exams on your local machine for later review.

Images are cached in an encrypted format. If there is not sufficient memory, exams are deleted in a first-in, first-out manner. If there is still not sufficient memory, a message displays.

Users who want to change the Local Exam Caching Machine preferences must have write access to the computer's registry settings. If domain users at your facility do not have this type of privilege, there is a workaround that keeps the security tight, but allows IntelliSpace PACS the ability to use this application section of the registry for our use. This is easily changed by adding a policy for domain users to allow full access to the HKEY_LOCAL_MACHINE\Software\Stentor registry section only plus its inherited keys for authenticated users. You only need to add full access to the HKEY_LOCAL_MACHINE\Software\Stentor\... , not to the full registry.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to Machine Preferences. The list of available machine preferences displays.
3. Click **Local Exam Caching**. The right side of the **Preferences** dialog box displays current local exam caching preferences. The **Local Path** field shows where the exams are being stored. You cannot edit this path.
4. Set the **Maximum Cache Size** in megabytes. This size may be restricted to prevent over-utilization of memory resources.
5. Set the following options:
 - Select the **Delete exams upon logout** check box to automatically delete cached exams when you log off of IntelliSpace PACS.

NOTE

If the "Delete exams upon logout" option is not selected, the cached exams will be retained even after the user's logging out. But, the "cache status" is not retained and does not get updated automatically. To update the cache status, the "Cache Exams With Prior" has to be selected again.

**CAUTION**

If “Delete exams upon logout” check box is not selected, then the exams are stored in Philips proprietary format, and it is the customer's responsibility to ensure the security of the data in the client work station.

- Select the **Automatically delete exams not accessed for more than:** check box to permit the system to automatically delete exams in your cache after the amount of time you specify.
1. Click **Restore Defaults** to return the local exam caching settings to their default values.
 2. Click **Apply** to save the settings and continue to set other preferences. Click **OK** to save your changes and close the **Preferences** dialog box.

Setting Scanner Preferences

You can set preferences for a bar-code scanner if your institution uses them to load specific exams.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to Machine Preferences. The list of available machine preferences displays.
3. Click **Scanner Preference**. The right side of the **Preferences** dialog box displays the scanner preferences you can set.
4. Select the **Select Scanner** check box. The other options are enabled.
5. Select the desired **Port Name**, **Baud Rate**, **Data Bits**, **Parity**, **Stop Bits**, and **Handshaking** settings for the scanner.
6. Select the **Mark Current Exam Read and Close on Scanning New Exam** check box if you want the previously viewed exam to be automatically Marked Read and closed when a new exam is scanned with the bar-code. If you only want the previous exam to be closed and not marked read, clear the check box.
7. Click **Apply** to save the settings and continue setting other preferences. Click **OK** when you are done.

Setting Remote Reading Preferences

Remote Reading mode is designed for Radiologists who read exams offsite. It allows a group of offsite Radiologists to function as a virtual group within the reading environment. The behavior of **Remote Reading** mode is dictated by your reading preferences. You can specify how exams are handled, auto-locking, and the maximum file size to be downloaded.

Important

Before you can select Remote Reading mode when logging in, the “Enable Remote Reading” check box must be selected in the Machine Preferences.

Remote Reading improves your reading experience when connecting to the main site from your off-site location. You can cache ahead up to three exams and two relevant priors, as well as including auto-locking/caching STAT exams in full fidelity, depending on your Machine preference settings. Before you can cache ahead, you need to select the **Automatically open next unread exam from active filter after marking read** check box in the **User Preferences >General Preferences**. See [“Setting General Preferences” on page 446](#).

Remote reading only applies to exams that you open from a filter; all exams you open from a filter are cached. You can unlock cached exams by right-clicking on an exam and selecting **Release Lock**. If you unlock the main exam, IntelliSpace PACS stops caching the exam and its priors. With Local Exam Caching preferences, you can set a preference for IntelliSpace PACS to automatically unlock cached exams locked by the look-ahead feature if they have not been opened within 60 minutes of locking. You can also set a preference to have IntelliSpace PACS automatically erase all cached exams from your hard drive when you log out. See [“Setting Local Exam Caching Preferences” on page 522](#).

Note the following:

- When you are using **Remote Reading** mode, if the **Include auto locking/caching of STAT exams** check box is selected, when you open a new exam that is not locked by another user, the exam is locked and IntelliSpace PACS Radiology automatically caches the entire exam on your local machine. STAT exams are also automatically cached for reading.
- If the **look-ahead** setting is selected in the Remote Reading preferences, IntelliSpace PACS Radiology deploys a “look-ahead” cache to the local machine, automatically caching the next unread exam from your worklist and loading that exam when the exam being viewed is **Marked Read**.
- If you have a slow connection, you might need to wait for a large exam to finish caching before you can open it.
- You must have the ISTMPREF or ISTDICTATE security code to access the **Remote Reading** Machine preference.



WARNING

To enable remote users to use the Remote Reading feature, your System Administrator should configure Least Cost Routing rules to display studies in full resolution.

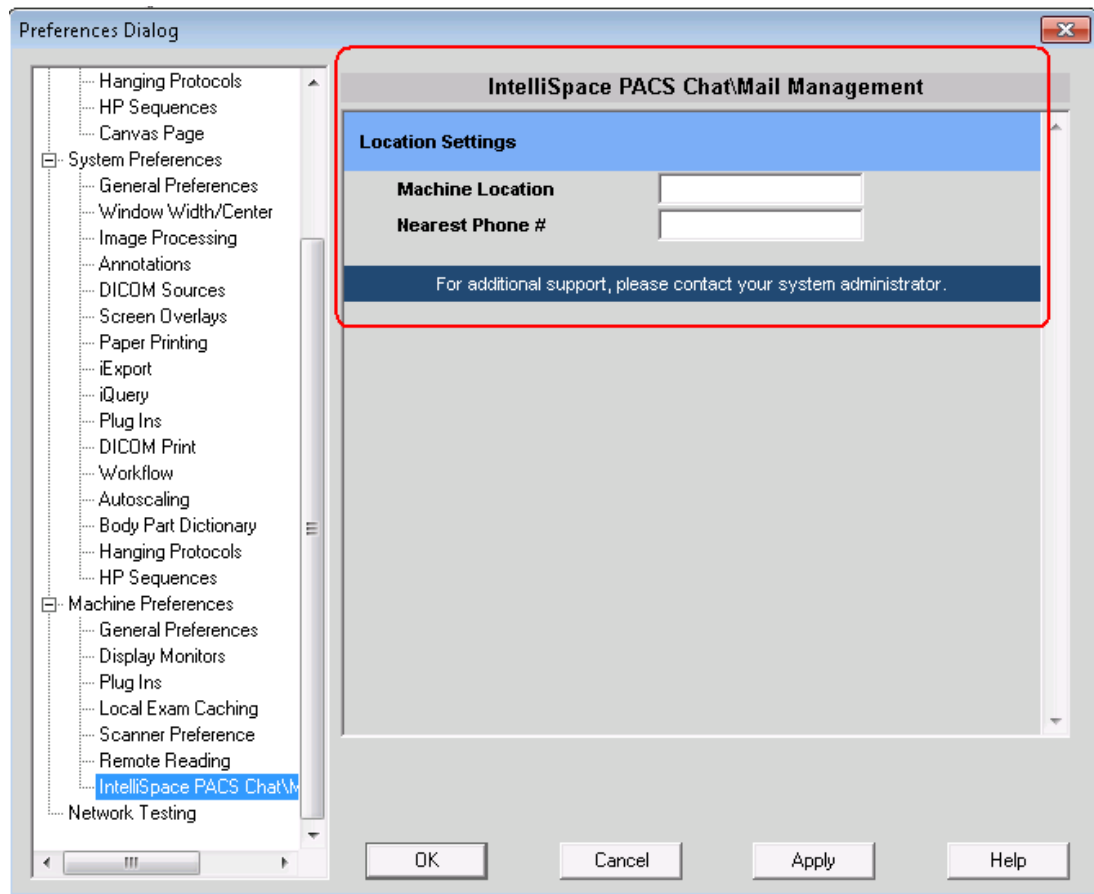
1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to Machine Preferences. The list of available machine preferences displays.

3. Click **Remote Reading**. The right side of the **Preferences** dialog box displays the remote reading preferences you can set.
4. Select the **Enable remote reading** check box. This enables the fields in the Remote Reading pane in the Preferences dialog box, and adds the **Remote Reading** option to the IntelliSpace PACS Radiology login screen. You must have the ISTSUPPORT security code to select the **Enable remote reading** check box.
5. Select the options you want. You can specify the number of exams to cache in advance, as well as the number of relevant priors to cache with each unread exam.
The number of priors cached is the lesser of that specified by the hanging protocol and the Remote Reading preferences.
6. Specify the maximum file size (MB) and whether or not to include the locking and/or caching of STAT exams.
7. Click **Apply** to save the settings and continue setting other preferences. Click **OK** when you are done.

Setting IntelliSpace PACS Chat\Mail Management Preferences

The Chat\Mail Management preferences are used to identify the machine location and the number of the closest telephone (to that machine) when a Workflow Layer user is chatting or emailing using the IntelliSpace PACS Chat\Mail feature. This information is seen next to the user's name in the contact list of users, when you click the arrow to the left of the contact's name. See the *IntelliSpace PACS Workflow Layer 2.0 User Guide* for more information on viewing this contact data.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click the **+** sign next to Machine Preferences. The list of available machine preferences displays.
3. Click **IntelliSpace PACS Chat\Mail Management**. The right side of the Preferences dialog box displays the Chat\Mail Management preferences you can set.



4. Under Location Settings, enter the **Machine Location** and the **Nearest Phone #**.
5. Click **Apply** to save the settings and continue setting other preferences. Click **OK** when you are done.

Setting Network Testing Preferences

NOTE

Network Testing is not a Machine Preference. It is, however, present and configurable in the Preferences dialog below Machine Preferences.

System Administrators with the proper privileges can configure numerous aspects of network testing and view the results of those tests on a server-by-server basis. In most cases, the network testing options will be used by an IntelliSpace PACS user in conjunction with a Philips Customer Care representative to troubleshoot network speeds. However, if you find that images are displaying slowly or that IntelliSpace PACS is not responding quickly, you can test the network on your own.

1. Click the **P** icon in the upper right corner of the IntelliSpace PACS Control Strip.
2. Click **Network Testing**. The right side of the **Preferences** dialog box displays the current network settings.
3. Set the **Bandwidth Threshold** to the maximum speed of your network. You can also set the size of the test pack in this field.
4. Set the **Latency Threshold** to the maximum allowable response time for the server. If you are going to run a continuous test, set the **Delay Between Tests** between 0 and 3600 seconds. You can set the **Bandwidth Test Size** between 1 and 20000 KB.
 - The **Run Continuously** check box is only for Philips use and is password-protected.
5. Select the **Log Result to file** check box if desired. The log is stored in %PUBLIC%\Philips\<majorVersion.minorVersion>\iSiteLogs\ (Windows 7).
6. Select the **Log Results to server** check box if desired.
7. Select the individual server(s) you want to test, or click **Select All**.
8. When you have set all options, click **Start**. This runs the test you have configured and displays the results below. Results displayed in red indicate that the server should be investigated by a System Administrator or Philips Customer Care representative.
9. Click **OK** to save your changes and close the **Preferences** dialog box.

24 Mouse and Keyboard Reference Sheet

Mouse Control Reference Sheet

IntelliSpace PACS includes User preferences for the following mouse options:

- **Mouse Scheme Options:** You can choose whether you want to use the standard mouse actions and cursor (**Standard**) or use cursors whose shape indicates their action (**Enhanced**). **Standard** is enabled by default. See [“Standard Mouse Scheme” on page 529](#), [“Enhanced Mouse Scheme” on page 531](#), and [“Setting Mouse Preferences” on page 452](#).
- **Scrolling:** You can choose one of two options: **Coarse Fast Cine** scrolling or **Custom Scrolling**. See [“Scrolling” on page 531](#) and [“Setting Mouse Preferences” on page 452](#). Scrolling will either be **Fast Cine** or **Custom Scrolling**, depending on which method you choose. **Custom Scrolling** works the same in the **Standard** and **Enhanced** modes as **Coarse Fast Cine**.

Standard Mouse Scheme

If you select **Standard** mouse scheme options in the Mouse User preferences, the following actions are available. See [“Setting Mouse Preferences” on page 452](#).

Action	Left Button	Wheel	Right Button
Click	Selects and deselects images and/or series. Also releases any other mouse modes currently in effect.	Not used	Displays menu
Double-click	Opens image popup window. In a list of patients or exams, opens the most recent exam available for that patient. (Only available when using IntelliSpace PACS on an internal network.) On a popup window title bar, toggles between displaying the entire window and just the title bar. On a pane in the diagnostic monitor, toggles full screen image mode for that image.	Enables Fast Cine mode in the Canvas Page with an initial frame rate that is based on the User Display Preference for the Default Cine Rate. See “Setting Display Preferences” on page 460 . Double-clicking again turns Fast Cine mode off. You can also use the middle wheel click and drag for Fast Cine .	Not used

Action	Left Button	Wheel	Right Button
Click middle button + drag up and down		Enables Coarse Fast Cine mode. This mode may skip images, depending on how far the mouse is from where the Fast Cine originally began.	
Click + drag	On the image: Changes window level vertically. Changes window width horizontally. On the image window: Moves images or series within the exam rack.	X-Rays: Pan in zoomed view Stack Series: Enables Fast Cine.	Not used
Alt+drag	Zoom	Pan in zoomed view	Not used
Ctrl+drag	Pan	Pan	Not used
Roll wheel forward or backward	Not used	X-Rays: Zoom into or out of the image at the cursor's location. Series: Frame-by-frame review through slices. In Cine Mode: Exits Cine mode	Not used
Hold Shift while cineing a linked stack	Temporarily disengages a stack link.	Temporarily disengages a stack link.	Temporarily disengages a stack link.
Move up or down		In Fast Cine mode, changes the frame rate. Move the cursor up to cine backward and down to cine forward. The farther you move the cursor from the anchor point (that is, the click point or direction change point), the faster the frame rate.	
Hold middle mouse button and move mouse vertically or horizontally		When Custom Scrolling is selected with the Standard Mouse Scheme option, images scroll until either the button is released, the mouse is halted, or the end of the stack has been reached.	

Enhanced Mouse Scheme

If you select **Enhanced** mouse scheme option in the Mouse User preferences, the cursors shapes indicate their action. See [“Setting Mouse Preferences” on page 452](#).

Cursor	Description
	Window Width/Level
	Pan
	Zoom
	Scroll
	Acceleration Gain

You can cycle through the cursor modes by double-clicking the middle mouse button or choosing a mode from the **Interaction** menu in thumbnail or image popup windows.

When IntelliSpace PACS starts, the mouse cursor is set to a regular arrow. After you change the cursor mode in the General User preferences, it is persistent.

If the current mouse cursor is set to scroll, and the mouse hovers over a non stack image, the mouse cursor changes to Window Width/Level mode. When the cursor is moved over a stack image again, it changes back to scroll mode.

Note the following about enhanced cursors in stack images:

- You double-click the left mouse button to select images and use click-drag to perform the mouse mode functions.
- When **Custom Scrolling** is enabled with the Enhanced Mouse Scheme option, holding the left mouse button down while scrolling moves through the stack images until the button is released, the mouse is halted, or the end of the stack has been reached.

Scrolling

Coarse Fast Cine scrolling is the default method, but **Custom Scrolling** is available as a Mouse preference. See [“Setting Mouse Preferences” on page 452](#). You engage **Coarse Fast Cine** mode by left-clicking while dragging the mouse down past the point in which you placed your cursor to cine through the images.



WARNING

Coarse Fast Cine may skip images, depending on how far the mouse is from where the Fast Cine originally began.

When **Custom Scrolling** is enabled, **Coarse Fast Cine** is disabled.

The key difference between **Coarse Fast Cine** and **Custom Scrolling** is the following:

- In **Coarse Fast Cine**, scrolling automatically queues up a number of images and then displays the entire queue based on the initial mouse movement distance.
- In **Custom Scrolling**, users have precise control of the image set by starting image traversing when the mouse is moved, and immediately halting the traversing when the mouse is stopped or the button is released. Many users prefer this method of controlling image stack navigation. The number of images that scroll when the mouse is moved can be decreased or increased using slider bars. **Custom Scrolling** supports **Standard** and **Enhanced** mouse configurations, and is disabled by default.



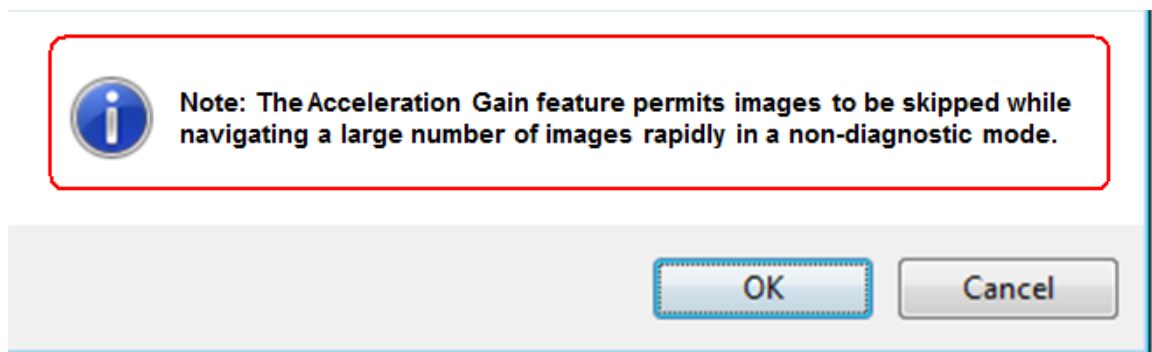
The **Response Rate** (speed) and **Acceleration Gain** options can be used separately or combined, as follows:

- **Response Rate** allows you to use a slider to set how fast you want to want to move through a stack of images. If the **Response Rate** slider is set without an **Acceleration Gain** enabled, no images are skipped, regardless of the speed at which the mouse moves. The slower the mouse moves, the more accurate correlation there is between the number of viewed images and the distance the mouse is moved, due to processor and cache limitations.
- **Acceleration Gain** allows you to use a slider to set the acceleration sensitivity.



WARNING

When the **Acceleration Gain** option is selected, the cursor changes shape when a set of images is passed over and not shown to indicate that some image skipping is occurring. This is analogous to a flipping through the pages of a book to quickly get to the area of the book you want to begin to read. When you select this option, you must acknowledge the following message, which informs you that images may be skipped when navigating a large number of images. You control when skipping occurs by the rapidity with which you move the mouse. The cursor changes shape to indicate that images are being skipped during a non-diagnostic transversal of images.



Note the following about Custom Scrolling sliders:

- The distance of mouse movement directly correlates to the number of images that increment in the stack, after the entire image stack has been read into the IntelliSpace PACS memory.
- When the slider is set in the middle position and **Acceleration Gain** is selected, the stack scrolls with a standard movement across the height of the display at least 900 images (assuming a 2560 x 2048 monitor in a Landscape position).
- By default, the sliders are set to the middle position; **Slow** can go slower and **Fast** can go faster than the default Mouse Properties settings in Windows.

NOTE

The calculations used by the sliders are based on default Mouse Properties settings for Windows on that machine. If the user changes these default settings, the relative values of Slow and Fast on the sliders are impacted. We recommend that users retain the default value for Mouse Properties in Windows when using this feature.

When either **Response Rate** or **Acceleration Gain** is selected, when the mouse reaches the top or bottom row of the display, the scrolling continues in the same direction as it was previously defined, using the speed specified in the slider. This means that you do not have to pick the mouse up to begin scrolling again after the mouse has reached the top or bottom of the screen.

Keyboard Commands

This table describes the keyboard commands when using IntelliSpace PACS with a two-button mouse. These commands replace the wheel function of the three-button mouse, but can also be used by three-button mouse users.

You can program other input devices, such as the ShuttlePro, to use the IntelliSpace PACS keyboard shortcuts. See the applicable device user manual for general configuration instructions.

NOTE

You can set a User preference to change and create keyboard shortcuts. See [“Setting Keyboard Shortcut Preferences” on page 456](#). The table below indicates which keyboard shortcuts are hardcoded and cannot be changed.

The following keyboard shortcuts cannot be configured:

Description	Action
Numbers 1-9	Allows you to cycle through the various preset window width/level settings for a CT image or series.
Delete	Removes the currently selected measurement or annotation from the image. The user must first select that annotation and then click Delete.
Home and End	Jumps to the first and last images in the selected image series, respectively.
Mouse-over	Brings a popup window to the foreground.
Period (.) and Comma (,)	Increases or decreases the angle for the Edge Enhancement and Edge Detection Image Processing tools. For CLAHE Image Processing, alternately increases or decreases the clip parameter.

The following keyboard shortcuts can be configured:

Description	Default Keystroke	Hardcoded	Action
Angle Measurement	[NONE]		Activates the angle measurement for a single use.
Angle Measurement Persistent	[NONE]		Keeps the angle measurement tool active for multiple uses.
Arrow Annotation	A		Activates arrow annotation for a single use.
Arrow Annotation Persistent	[NONE]		Keeps the arrow annotation tool active for multiple uses.
Canvas Page Rehang	[NONE]		Rehangs the exams displayed on the canvas page.
Circle	[NONE]		Activates the Circle Annotation for a single use.
CLAHE	Shift + C		Applies the CLAHE filter to the image (when Mammography features are enabled)

Description	Default Keystroke	Hardcoded	Action
Collection Navigation Next Prior Exam	[NONE]		Navigate forward to the next prior exam.
Collection Navigation Previous Prior Exam	[NONE]		Navigate backward to the previous prior exam.
Collection Navigation Rectangle Backward	[NONE]		Navigate to the previous collection window in the main and prior exam.
Collection Navigation Rectangle Forward	[NONE]		Navigate to the next collection window in the main exam and prior exam.
Flip Horizontal	Ctrl+H		Flips an image horizontally.
Flip Vertical	Ctrl+T		Flips an image vertically.
Go to Beginning of Stack; Go to End of Stack	Home and End		Jumps to the first and last images in the selected image series, respectively.
Help Manual	F1		Open IntelliSpace PACS online help
Horizontal Rack	Ctrl+Alt+H		Horizontal rack
Invert Grayscale	I		Inverts grayscale
Link/Unlink Images	[NONE]		Toggles between linking and unlinking images in an exam.
Localizer Mode	F12	Yes	Toggles the Localizer Tool on and off.
Magnifying Glass	Y		Toggles Magnifying Glass on and off
Mark as Negative	Ctrl + Shift + N		Marks a displayed exam with a Negative rating
Mark as Positive	Ctrl + Shift + P		Marks a displayed exam with a Positive rating.
Mark as Read	F3		Marks the current exam as read if it is not marked read already.
Mark as Undecided	Ctrl + Shift + U		Marks a displayed exam with an Undecided rating.
Mirror Link	[NONE]		Toggles mirror links on and off in an exam.

Description	Default Keystroke	Hardcoded	Action
Next Exam on Worklist Filter	Ctrl + F10		Displays the next unread, unlocked exam (when Mammography features are enabled)
Next Hanging	W		Next hanging protocol
Next Hanging Sequence	Shift + W		Next sequence of hanging protocol
Next Image	[NONE]		Displays the images going forward in order.
Next Prior	Shift+F10		Displays the next opened prior exam (if the main exam has more than one prior exam) onto the diagnostic monitor(s) for comparison while keeping the main exam loaded on the diagnostic monitors,
Next Series from the Exam	F8		When viewing a popup image in a horizontal rack, this key hangs the next series from the exam. When viewing a popup image in a vertical rack, this keys hangs the next exam, not the next series within the exam
Page Navigation Rectangle Backward	F9		Simultaneously loads the previous current and prior series (if available) in the exam rack onto the diagnostic monitors.
Page Navigation Rectangle Forward	F10		Simultaneously loads the next current and prior series (if available) in the rack onto the diagnostic monitors.
Previous Exam on Worklist Filter	Ctrl + F9		Displays the previous patient on the worklist. (Only available when the Mammography features are enabled.)
Previous Hanging	Q		Previous hanging protocol
Previous Hanging Sequence	Shift + Q		Previous sequence of hanging protocol
Previous Image	[NONE]		Displays the images going backward in order.
Previous Prior	Shift+F9		Displays the previously opened prior exam (if the main exam has more than one prior exam) onto the diagnostic monitor(s) for comparison while keeping the main exam loaded on the diagnostic monitors.

Description	Default Keystroke	Hardcoded	Action
Previous Series from the Exam	F7		When viewing a popup image in a horizontal rack, this key hangs the previous series from the exam. When viewing a popup image in a vertical rack, this key hangs the previous exam, not the previous series within the exam.
Reset Image Display	Ctrl + R		Resets the image back to its original WW/WL. Measurements and annotations can also be reverted. This shortcut does not apply to rotating or flipping images (when Mammography features are enabled)
ROI Circle Measurement	[NONE]		Activates the ROI circle measurement for a single use.
ROI Circle Measurement Persistent	[NONE]		Keeps the ROI circle measurement tool active for multiple uses.
ROI Ellipse Measurement	[NONE]		Activates the ROI ellipse measurement for a single use.
ROI Ellipse Measurement Persistent	[NONE]		Keeps the ROI ellipse measurement tool active for multiple uses.
ROI Freehand Measurement	[NONE]		Activates the ROI freehand measurement for a single use.
ROI Freehand Measurement Persistent	[NONE]		Keeps the ROI freehand measurement tool active for multiple uses.
Rotate 90 CW	[NONE]		Rotates the image 90 degrees clockwise.
Ruler Measurement	[NONE]		Activates the ruler measurement for a single use.
Ruler Measurement Persistent	[NONE]		Keeps the ruler tool active for multiple uses.
Scale Hanging Images to Same Size	NONE		Scales hung images to the same size.

Description	Default Keystroke	Hardcoded	Action
Scout Line Mode	F11	Yes	Toggles Scout Mode on and off.
Show/Hide All Overlays	Ctrl+F6		Toggles image overlays, DICOM overlays, and any measurements and annotations.
Show/Hide Bit Overlays	Ctrl+Alt+F6		Toggles bit overlays on and off
Show/Hide Image Overlays	F6		Toggles screen overlays. It does not toggle image overlays shutters and DICOM 6000.
Show/Hide Tomosynthesis Slice Indicator	[NONE]		Toggles Tomosynthesis Slice Indicator on and off
Show/Hide Shutter Displays	Ctrl+Shift+F6		Toggles shutter overlays on and off
Single Image Window Level	L + left mouse button drag	Yes	Adjusts the Window Width/Level of a single image instead of the entire series (when Mammography features are enabled)
Spine Labeling Annotation	[NONE]		Opens the Spine Labelling panel.
Step-Zoom Step	S		Activates the Step-Zoom tool in an image. You can change this to another keyboard shortcut in the User preferences.
Text Annotation	[NONE]		Enables the text annotation for a single use.
Text Annotation Persistent	[NONE]		Keeps the text annotation tool active for multiple uses.
Toggle All Links	Shift + L		Toggles links on and off. When the links are off, the link symbols disappear from the windows description and the word "Link" does not appear in the overlay portion.
Toggle Cine Mode	C		Toggles loop mode.
Toggle Bounce Mode	[NONE]		Toggles bounce mode.
Toggle Hanging Protocol Monitor Icons	F2		On a one-monitor system, toggles between displaying the first and second series of the main exam. On a two-monitor system, toggles between what is displayed on Monitor 1 and Monitor 2.
Toggle Key Image	Space	Yes	Toggles key images.

Description	Default Keystroke	Hardcoded	Action
Toggle Manual Hanging Dialog	[NONE]		Toggles the display of the Manual Hanging Panel.
Toggle Pixel-to-Pixel Zoom	P		Toggles pixel-to-pixel zoom
Toggle Pin Prior to Hang	NONE		Use this shortcut key to hang any prior other than the hung prior when a HP sequence is applied.
Toggle SR CAD Results	Shift + S		Toggle SR CAD results. The label "CAD Markers On" is displayed at the bottom of the image when the keyboard shortcut to display CAD markers has been used. The label "CAD Markers Off" is displayed at the bottom of the image when the keyboard shortcut has been used to turn the marker off. "CAD Markers Off" is also displayed when an image is first displayed.
Toggle True Size Zoom	T		Turns the True Size zoom on and off (when Mammography features are enabled)
User Tool Palette	M		Toggles the User Tool Palette on and off.
Vertical Rack	Ctrl+Alt+V		Vertical rack
Worklist/Canvas Page Refresh	F4	Yes	Refresh Worklist/Canvas Page

Tip

The keyboard shortcuts configured in the User Preference will be displayed in the context menu.

The following keyboard shortcuts cannot be used:

Keystroke

Number 0-9 (also on number key pad)

+/- (also on number key pad)

ESC

Tab

Delete

Keystroke
Cursor Up, Down, Left, Right
F5
Windows Key (Start)
Context-menu Key
Print Key
Ctrl+Alt+Delete (Combination)
Space
F4
L
F11
F12
F1

25 IntelliSpace PACS Quick Reference Table

This table describes IntelliSpace PACS features, from basic image-selection and viewing features to the more complex image-manipulation features.

You can set preferences for keyboard shortcut to map keys and key combinations to actions in IntelliSpace PACS. See [“Setting Keyboard Shortcut Preferences” on page 456](#). You can also specify enhanced cursors by setting a User General preference. See [“Setting General Preferences” on page 446](#).

Task	Action
Quickly load or unload an exam	Right-click the exam listing in the Patient History and select Open/ Close exam.
Expand an image or image-series	Double-click the left mouse button on the desired image or image-series.
Adjust brightness and contrast (Window Width/Window Level)	Left-click the image and drag the left mouse button horizontally or vertically, respectively. Default WW/WL , Histogram Calculation and Modality Default values are available for all modalities in the menu. CT exams also display preset Window Width/Level values in the menu. These values include the Default WW/WL , Abdomen , Brain , Bone , Liver , Lung , Mediastinum , and any custom Window Width/Levels created by the IntelliSpace PACS System Administrator on a site-by-site basis.
Compare (link) images in an exam	Right-click on an image and select the New Link from the menu. Right-click on the image you would like to link and then select Join Link . You can also quickly link all images with the same point of reference by choosing Link All .
Select and deselect images or image-series	Left-click on the desired image or image-series.
Release any current mouse mode	Left-click.
Access image menu	Right click on the desired image or image-series.
Show/hide image overlays	Press F6 to toggle lays on and off for all exams in the active patient. Press Ctrl + Alt + F6 to toggle only DICOM 6000 overlays on/off. Press, Ctrl + F6 to toggle all overlays on/off (IntelliSpace PACS lays, IntelliSpace PACS Annotations & Measurements, and Embedded and Declared DICOM Overlays).
Pan	X-Ray images: With a wheel-mouse, click and drag the wheel-button. With a two button mouse, left-click and drag the mouse while holding down the Ctrl key. Series: Left-click and drag the mouse while holding down the Ctrl key.
Zoom	X-Ray images: With a wheel-mouse, roll the mouse wheel back and forth. With a two-button mouse, click the left mouse-button and drag the mouse while holding down the Alt key. Series: Click the left mouse-button and drag the mouse up/down while holding the Alt key.

Task	Action
Review series frame-by-frame	With a wheel-mouse, roll the mouse wheel back and forth. With a two-button mouse, press the up and down arrows keys.
Fast Cine review for series	Double-click a multi-image stack series. The initial frame rate is based on the User Display Preference for the Default Cine Rate. See “Setting Display Preferences” on page 460 . Alternatively, you can hold down the mouse wheel and drag the mouse up or down.
Coarse Fast Cine	In Standard mouse mode, click the middle mouse button while dragging the mouse past the point in which you placed your cursor. In Enhanced mode, left-click while dragging the mouse past the point in which you placed your cursor. In Enhanced mode, you cannot double-click the middle mouse button to start Fast Cine mode. The Coarse Fast Cine mode may skip images, depending on how far the mouse is from where the Fast Cine originally began.
Access diagnostic reports for an exam or patient	Click the small Report icon at the upper left corner of the exam margin. This button is white if reports are unavailable or are not supported by your institution. You can also right-click the exam listing in the Patient History and select Show Reports from the menu.
Access exam notes	Right-click on exam listing or the timeline and select View Exam Notes .
Invert brightness and contrast	Right-click on an image and select Image Processing from the menu, then choose Invert Image .
Flip an image around the x or y axis	Right-click on an image, select Flip/Rotate/Sort from the menu, then choose Flip Vertical or Flip Horizontal .
Rotate an image clockwise or counter-clockwise	Right-click on an image, select Flip/Rotate/Sort from the menu, then choose Rotate 90 CW or Rotate 90 CCW .
Sort an image series	Right-click on an image, select Flip/Rotate/Sort from the menu, then choose Table Position Ascending , Table Position Descending , Image Number Ascending , or Image Number Descending .
Annotate an image with text or symbols	Right-click on an image and select Annotations from the menu. This function is only available in the diagnostic monitors and image popup windows.
Measure lengths, angles or regions of interest	Right-click on an image and select Measurements from the menu. This function is only available in the diagnostic monitors and image popup windows.
Delete measurements	Right-click the measurement handle and select Delete All Measurements and Annotations from the menu. This function is only available in the diagnostic monitors and image popup windows.
Edit measurements format	Right-click the measurement handle and select Edit Font or Edit Line Style from the menu. This function is only available in the diagnostic monitors and image popup windows.

Task	Action
Display multi-image modes	To simultaneously view multiple images from an image series, right-click the image series and choose Multi-Image Mode from the menu. The available options (in column:row notation) are: 1:1 , 1:2 , 2:1 , 2:2 , 1:3 , 3:3 , 3:4 , and 4:5 . This option is only available for images in the diagnostic monitors and expanded windows, not for thumbnail images in the diagnostic exam rack.
Temporarily disconnect a linked image	Hold down the Shift key while performing image manipulation with the mouse or the keyboard.
Unlink images in an exam	Right-click on the image you wish to unlink and select Leave Link from the menu.
Convert an MR slice into a Scout view	Right-click on the image and select Show Line Mode from the menu.
Auto-link expanded images	Expanded CT or MR images auto-link when their margins are placed side by side. Left-click on the image's top margin or bottom annotation area and drag images margins edge to edge.
Create a scout view	Right-click on an image and select Scout Line Mode from the menu.
View a series with multi-image mode	To view a series with several slices displayed simultaneously in one window, right-click the series and select the desired configuration from the Multi-image mode menu.
Open a clone-image in an image popup window	Right-click an image and select Clone Window from the menu, then double-click the cloned image.
Copy to the Windows clipboard	Right-click on an image and select Save and Window/Image To Clipboard from the menu.
Apply spine labeling to an image of the spine	Right-click on any image or series which includes the vertebrae and select Spine Labeling from the Annotations menu. Click the image where you would like labels inserted in conformance with the Spine Labeling dialog box.
Increase or decrease the angle for the Edge Enhancement, CLAHE and Edge Detection Image Processing tools	Hover the mouse over the image that has one of these Image Processing tools applied and click the “,” (comma) key to decrease the degree parameter and the “.” (period) to increase the parameter.
Mark an image as a “key image”	Press the space bar.
View exam information	Right-click on the left margin of the exam-row, and select Exam Information from the menu. If you are in Vertical mode, right-click the top margin to access the menu.
View the available presentation state for an exam	Right-click on the left margin of the exam-row, then select Presentation State from the menu. If you are in Vertical mode, right-click the top margin to access the menu.
Turn the Mark Read designation on	Press F3 while the mouse is over the exam you wish to mark as read.

Task	Action
Close an exam	Right-click on the left margin of the exam-row, then select Close Exam from the menu. If you are in Vertical mode, right-click the top margin to access the menu.
Change between horizontal and vertical rack modes	Right-click on the left margin of the exam-row, then select Horizontal Rack or Vertical Rack from the menu. If you are in Vertical mode, right-click the top margin to access the menu.
Reorder images in an exam row	Place your cursor on the image's gray top margin or bottom annotation area, left-click and drag to a new location.
Print	Right-click on an image and select Print from the menu, then choose Paper Printer or DICOM Printer .
Save image to file or to clipboard	Right-click on the image you wish to save and select Save from the menu. Then select Window/Image to Clipboard/ File .
Export an exam to DICOM	Right-click an exam listing either in the Patient History or in a worklist and select Export via DICOM from the menu.
Logout	Click the X button in the upper right corner of the Control Strip.

26 Security

Session Management

Session Management is managing the interaction between the IntelliSpace PACS Client and the IntelliSpace PACS Server. The configurations for the Session Management are set at the IntelliSpace PACS Administration Tool.

Based on the configurations, all the clients will notify the user with different messages in different scenarios. This section will assist you to understand the different scenarios where the logins to the Client and Server and controlled.

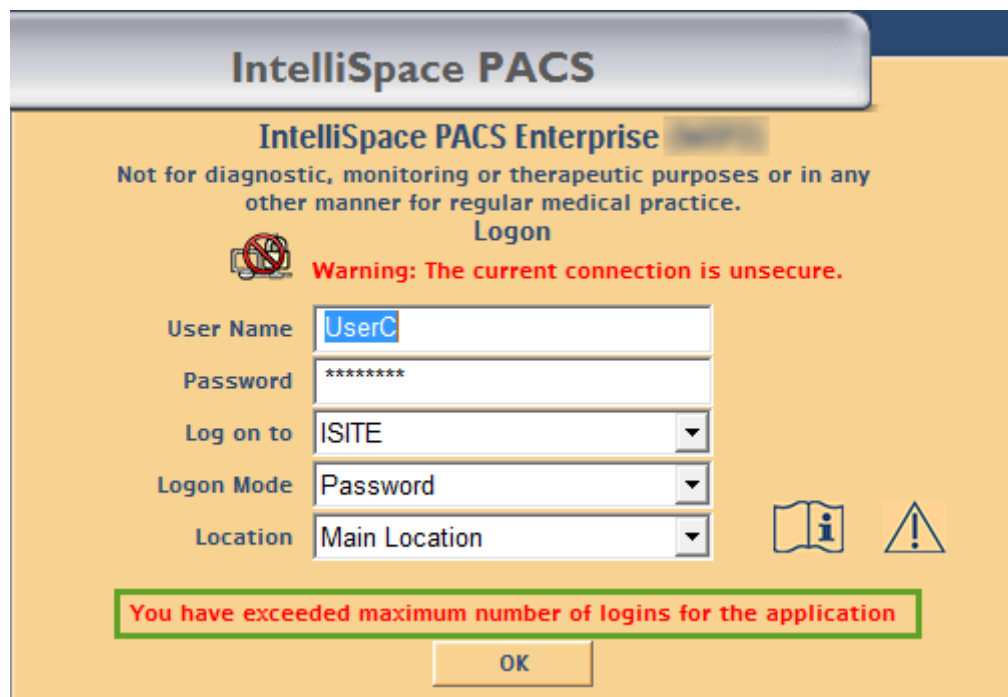
Logins to Client and the Server

NOTE

For a successful login, users should pass all the three “Session Management” conditions as mentioned in this section.

Maximum Number of Sessions for a User for all the Application

When a user exceeds the maximum number of sessions as set in the iSite Administration tool, then the following message is displayed:



IntelliSpace PACS

IntelliSpace PACS Enterprise

Not for diagnostic, monitoring or therapeutic purposes or in any other manner for regular medical practice.

Login

 **Warning: The current connection is insecure.**

User Name:

Password:

Log on to:

Logon Mode:

Location:

You have exceeded maximum number of logins for the application

For example, If the value of the “ **Maximum Sessions Per User**” is set to 2, then:

- The user tries to login to ISE: **Login Successful**
- The user tries to login to ISE: **Login Successful**
- The user tries to login to ISE: **Login Fails**

Maximum Number of User Sessions for each Application:

When a user exceeds the maximum number of sessions for each application (all Clients) as set in the iSite Administration tool, then the following message is displayed:

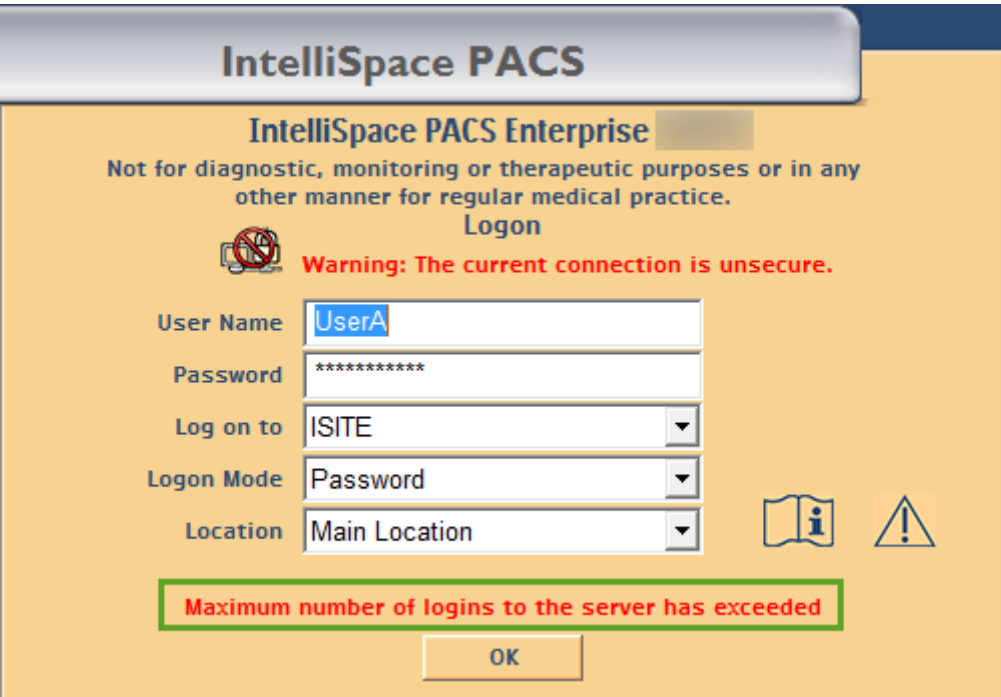
The image shows the IntelliSpace PACS Enterprise login interface. At the top, it says "IntelliSpace PACS Enterprise" and includes a disclaimer: "Not for diagnostic, monitoring or therapeutic purposes or in any other manner for regular medical practice." Below this is a "Login" section with a warning icon and the text "Warning: The current connection is insecure." The login fields include "User Name" (filled with "UserC"), "Password" (masked with "*****"), "Log on to" (dropdown menu showing "ISITE"), "Logon Mode" (dropdown menu showing "Password"), and "Location" (dropdown menu showing "Main Location"). To the right of these fields are icons for help and a warning. At the bottom, a red box with a green border contains the message "You have exceeded maximum number of logins for the application", and an "OK" button is located below it.

Example: If the value of the “Maximum Sessions Per User” is set to 2, then:

- The user tries to login to ISE: **Login Successful**
- The user tries to login to ISE: **Login Successful**
- The user tries to login to ISE : **Login Fails**

Maximum Number of Sessions at System Level

When a user exceeds the maximum number of sessions in the server as set in the iSite Administration tool, then following message is displayed:



For example, if the value of the “ **Maximum Sessions at System Level**” is set to 3, then:

- The **User A** tries to login to ISE: **Login Successful**
- The **User B** tries to login to ISR: **Login Successful**
- The **User C** tries to login to Admin Tool: **Login Successful**
- The **User D** tries to login to Client Web: **Login Fails**

Secure Communications

An icon is displayed to represent if the connection between the client and the server is either secure or not secure.

Icons	Description
	The communication between the client and server is secure
	The connection between the client and server is not secure

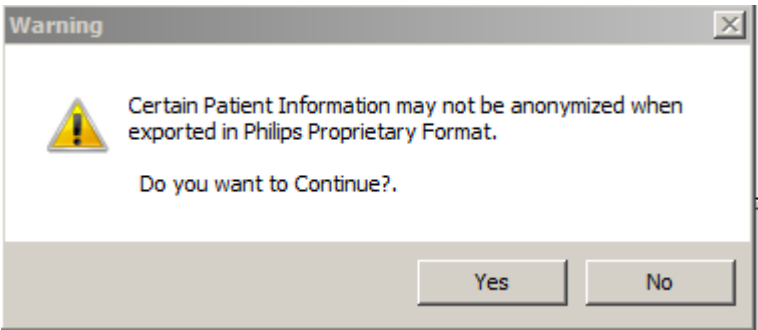
Certificate Login Error Messages

The IntelliSpace PACS Radiology and IntelliSpace PACS Enterprise applications validates the security certificates at the time of login. When the certificate validation fails, the following error messages are displayed.

Message	Description
The server's security certificate has expired.	If the certificate issued by the Certificate Authority has expired.
The server's security certificate is not issued by a trusted certificate authority.	If the Certificate issuer authority is unknown or not present.
Unable to validate server security certificate.	If the issuing authority is unable to validate the certificate against the revocation list.
The server's security certificate is revoked.	If the Certificate Authority has revoked the issued certificate.

Warning Messages in Secure Mode

A warning message will be shown when user selects the anonymization option for local export in Phillips proprietary format.



Viewing Login Details

The users can view/monitor the successful/unsuccessful log in attempts along with the date, time and the IP address of the Client system from where the login was attempted.

- 1. Login to the Client system.
⇒ The banner area displays the login information along with the date and time at the top.

NOTE

The last successful login date and time is displayed by default.

Details	Description
Last successful logon was at "time" on "date" from IP "address"	The time, date and IP address of the system from where the last successful login happened.
Number of unsuccessful logon attempts since last successful logon is: "".	The total number of unsuccessful login attempt within two successful logins.
Last unsuccessful logon was at "time" on "date" from IP "address"	The date, corresponding time and IP address of the last unsuccessful login.

27 Glossary

Accession Number (ACC #)

The unique identifier for exams; the maximum length of an accession number is 20 characters

CAD Marker

Computer-aided detection marker

Canvas Page

The window in which patient exams are displayed. Exams are displayed in Exam Racks that run horizontally or vertically across the Canvas Page. See [“Introduction to the Canvas Page” on page 187](#).

CC

View position: cranial-caudal

CD Manager

See Media Viewer

CLAHE

Contrast Limited Adaptive Histogram Equalization. A digital image process that visually enhances details on the image.

Control Strip

The top portion of the IntelliSpace PACS screen that displays the user name, currently active tools, and icons for the *Preferences* dialog box, online help, and logging off. See [“Control Strip” on page 69](#).

Diagnosis

The determination of the nature of a disease. Or, a dedicated viewing workflow for this purpose.

DICOM

Digital Imaging and Communication in Medicine; sometimes referred to as DICOM standard, or NEMA PS3. Provides a detailed specification that describes formatting and exchanging images and associated information.

Dictionary

A collection of related items stored in the database that have unique codes (for example, Body Part, Modality Type, and so on). Dictionaries are configured and maintained in the IntelliSpace PACS AdminTool.

Discussion Filter

A filter that selects all exams where there has been a difference of opinion between the first and second readers. This filter creates a to-do list for the third reader in a double-blind read workflow.

Double-Blind Read

Workflow where two readers (radiologists) evaluate and rate the same clinical images. The two readers work independently, and do not have access to each other's evaluations. This method is used to prevent individual bias during rating.

Duplicate Unique Identifier (DUP UID)

The situation that occurs when the same study identifier (UID) is given to multiple studies of different patients. IntelliSpace PACS includes tools that let you resolve problems related to duplicate UIDs. See [“Resolving Duplicate UIDs” on page 411](#).

Edge Enhancement

Image setting that improves the perceived sharpness of the image details.

Exam

An order received from the HIS/RIS that resides in the IntelliSpace PACS database. Exams do not necessarily have images. In IntelliSpace PACS, the unique identifier for exams is Accession #.

Exam Lookup

A search tool that allows you to find exams based on a combination of search criteria. See [“Exam Lookup Overview” on page 115](#).

Exam Rack

Patient exams (images or image-series) are displayed in Exam Racks. The order of the Exam Rack is chronological and corresponds to the Patient History.

Exception Handler

The feature you use to resolve exams whose DICOM information conflict with information from the RIS. See [“Using the Exceptions Handler” on page 175](#).

Filter

Tool for dynamic search and selection, based on user-defined criteria, and resulting in a dynamic workload.

Filter Criteria

The information you specify for a filter, such as Organization and Modality.

Folder

Container for storing patient exams of specific relevance or interest, resulting in a static workload (for example, teaching files).

Folder List

Provides access to a variety of IntelliSpace PACS tools, filters, and folders. See [“Folder List” on page 70](#).

Hanging Protocol

The feature that allows you to configure and customize how certain types of images will be displayed on the diagnostic monitors. See [“Using Hanging Protocols” on page 365](#).

Hanging Protocol Group

A dictionary that allows you to associate multiple exams with the same hanging protocol.

Hanging Protocol Series Matching Rule

A set of rules you define for hanging protocols to match specific images or series. See [“Series Matching Rules” on page 401](#).

History Folder

The folder in the Folder List that contains the last 100 exams you have viewed. See [“Folder List” on page 70](#).

iExport

The feature used to export exams via DICOM to another system or workstation, such as a 3D workstation. See [“iExport for DICOM Export” on page 348](#).

iExport Queue

A real-time display of the status of exams that have been exported using the iExport feature. You can also delete and restart exported exams from the iExport Queue. See [“Viewing the iExport Queue” on page 356](#).

Image quality icon

An icon in the lower-right corner of the image that indicates the relative quality of the image. See [“Image Quality Indicator” on page 65](#).

iQuery

The feature used to retrieve studies through DICOM Query Retrieve from another system. See [“iQuery for DICOM Study Retrieval” on page 358](#).

iQuery Queue

The feature that enables you to monitor the progress of an exam being retrieved, remove requested studies from the queue, and perform other administrative functions. See [“Viewing the iQuery Queue” on page 364](#).

IntelliSpace PACS Administration Tool

The application used by IntelliSpace PACS System Administrators and Technical Support to view and modify site configuration settings, such as security and dictionaries.

IntelliSpace PACS Enterprise

An enterprise-wide, Web-based image distribution solution that delivers the power of radiology to the point of patient care.

IntelliSpace PACS Radiology

IntelliSpace PACS diagnostic viewer, designed for Radiologists.

Keypad

A small hardware device, placed next to the keyboard, that offers a quick method for launching frequently used functions.

LCC

View position and breast examined: left cranial-caudal

LMLO

View position and breast examined: left medial-lateral oblique

Local Exam

The tool that enables you to download patient exams to your local machine. This speeds up access to image data when running IntelliSpace PACS remotely.

Localizer Tool

The tool that helps you visualize and navigate to a location in multiple series with different orientations. See [“Using the Localizer Tool” on page 275](#).

Machine Auto Logout Time

The amount of time after which a machine automatically logs you off from IntelliSpace PACS. The System Administrator can set a machine preference to override the system-wide auto logout time. See [“Setting General Preferences” on page 517](#).

Machine Filter

A filter that is associated with a specified machine (workstation). Users can only use a machine filter associated with the machine they are working on. See [“Filtering Worklists” on page 151](#).

Machine Preference

Various settings that control the behavior of IntelliSpace PACS on a specific machine. See [“Setting Machine Preferences” on page 517](#).

Matching Series Rules

See Hanging Protocol Matching Series Rules.

Media Viewer

The feature that allows you to create personalized CDs and DVDs that include an encapsulated version of IntelliSpace PACS and the patient exams you choose. See [“Using the Media Viewer” on page 341](#).

Merge/Link Candidate List

A list of patients that are identified by the IntelliSpace PACS system as candidate pairs for patient linking and merging. See [“Merging Patient Records from the Same Organization” on page 105](#).

MLO

View position: medial-lateral oblique

Modality

Type of acquisition device used to generate the images of an examination. Examples are CR, MG, RF, US, MR, XA

Multi-Image Mode

The feature that allows you to display multiple images in one window in various configurations.

My Filters

A folder in the Folder List that contains your personal filters. See [“Folder List” on page 70](#).

My History

A folder in the Folder List that contains the last 100 exams that you have viewed. See [“Folder List” on page 70](#).

Not Read By Me Filter

A filter that selects all exams that have not yet been read by the current user. This filter creates a personal to-do list.

PACS

Picture Archiving and Communication System

Navigation Rectangle

Interactive and resizable red and blue rectangles that correspond to the images being displayed on Diagnostic Monitors. These rectangles give a visual representation of the exams being displayed and can be used to load other images, series, or exams to your Diagnostic Monitor. See [“Using the Navigation Rectangles” on page 199](#).

Patient

A person receiving health care services. In IntelliSpace PACS, the unique identifier for patients is a Medical Record Number (MRN), also known as a Patient ID.

Patient Folder

A container of studies, examinations, series, images, reports, requests, texts, and notes of a patient.

Patient Lookup

A search tool that allows you to find patients based on a combination of search criteria.

Patient Lookup Screen

A screen that displays worklists, as well as tools for creating dynamic and static worklists (that is, filters and folders).

Permissions

The functions the user is permitted to perform on the system. Permissions are linked to the role that the user is given by the system administrator.

Personal Folders

A folder in the Folder List that contains exam links you want to save for future reference. See [“Folder List” on page 70](#).

Pixel-to-Pixel Zoom

Zoom setting where a single pixel in the image corresponds to a single pixel on the screen.

Presentation State

The presentation state of images or series refers to the attributes which determine how the images or series are displayed, e.g., zoom, window width/level settings, whether or not annotations and measurements are shown.

Prior

Clinical images from previous exams of a patient that can be relevant for diagnosing or rating the current medical condition of that patient.

Public Folders

A folder in the Folder List that can be shared with multiple users. See [“Folder List” on page 70](#).

Rack

See Exam Rack.

RCC

View position and breast examined: right cranial-caudal

Recent Images

Clinical images from previous exams of a patient that can be relevant for diagnosing or rating the current medical condition of that patient. Recent images date back to a limited time in the past – typically, several weeks.

Relevant Exam Timeline

A chronological list of all relevant exams available for the selected patient and exam. See [“Using the Relevant Exams Timeline” on page 190](#).

Relevant Prior

An exam with same body part or modality plus body part, that is considered to be relevant to the current exam.

Report

A written language representation or a voice recording of a diagnosis or a description of a procedure on paper, audiotape, and/or in electronic form.

RIS

Radiology Information System

RMLO

View position and breast examined: right medial-lateral oblique

ROI

Region of interest

Role

Defines the type of user; for instance, a radiologist, a radiographer, or a system administrator. A set of permissions and access to system functions are associated with a role.

Screening

Examination or testing of a group of individuals to separate those who are well from those who have an undiagnosed disease or defect or who are at high risk.

Breast Screening: A federal program to gather information about breast cancer in a defined group of the population.

Sequence

Ordered list of hanging protocols

Series

Set of medical images that are acquired with one piece of equipment and are spatially related to each other (i.e., same frame of reference).

Remote Reading

The feature that allows Radiologists to read IntelliSpace PACS exams over a low bandwidth connection. This enables a group of offsite Radiologists to function as a virtual group within the reading environment.

Series and Image Linking

The ability to combine two images to view, pan, or view slices simultaneously. See [“Linking Image Series” on page 249](#).

Shelf

See Exam Rack.

Shortcut Bar

A customizable way to access your most frequently used folders, filters, and tools. See [“Shortcut Bar” on page 77](#).

Single Read

Workflow where a single reader (radiologist) evaluates and rates the clinical images.

Split Exam

The feature that allows you to split a series according to specific DICOM tags. See [“Splitting Exams” on page 284](#).

Step Zoom

Zoom function that divides the image into rectangular areas of an equal size. Each area is displayed with the pixel-to-pixel zoom setting. All areas can be displayed sequentially, in a stepwise manner.

Split Mode

The ability to split a monitor vertically or horizontally.

Study

A set of images. In IntelliSpace PACS, a study is associated with a SUID (Study Unique Identifier).

System Administrator

Person with special permissions to define the users of the system and hospital-specific settings; for example, roles and worklists.

System Filter

A filter created by an IntelliSpace PACS user that can be shared with multiple users. See [“Filtering Worklists” on page 151](#).

System Hanging Protocol

A hanging protocol created by the IntelliSpace PACS System Administrator that is available to all users. See [“Using Hanging Protocols” on page 365](#).

System Preferences

Various settings that control the behavior of IntelliSpace PACS that are system-wide. See [“Setting System Preferences” on page 471](#).

Task

Used by System Administrators to assign organization-specific privileges to users.

True-Size Zoom

Zoom setting that approximately represents the actual size of the anatomical structures on the screen.

User Filter

A filter created by an IntelliSpace PACS user that is only available to that user. See [“Filtering Worklists” on page 151](#).

User Hanging Protocol

A hanging protocol created by a user that only they can use. See [“Configuring Hanging Protocols” on page 368](#).

User Preferences

Various settings that control the behavior of IntelliSpace PACS for the user. See [“Setting User Preferences” on page 445](#).

Window Width/Window Level

Window Width is the total range of pixel values displayed on the screen. Increasing the window width will decrease the contrast.

Window Level is the value of the pixels at the center of the range defined by window width. Increasing the window level will decrease the brightness.

Worklist

A list of cases to be worked on. The user may specify the contents of the worklist.

28 Accessing PDF File of Online Help

To view this book in PDF format, go to: <http://<server IP>/PACSAdministration/Help/PrintableHelpManuals.aspx>

[END OF DOCUMENT]

29 Appendix A: Network Safety, Security, and Privacy

Customer's Role in the Product Security Partnership

Philips recognizes that the security of Philips Healthcare products is an important part of your facility's security strategy. However, these benefits can only be realized if you implement a comprehensive, multi layered strategy (including policies, processes, and technologies) to protect information and systems from external and internal threats.

The customer is responsible for setting up and maintaining a secure and stable IT environment according to general IT standards.

Following industry-standard practice, your strategy should address:

- Physical security (e.g., do not allow unauthorized people to use IntelliSpace PACS 4.4)
- Operational security (e.g., make sure that any sensitive information left on the system—such as exported files—is removed; make sure that users of IntelliSpace PACS 4.4 do not leave the open system unattended)
- Procedural security (e.g., create awareness with regard to the dangers of social engineering; every single user should be given a separate account; do not forget to remove an account when it is no longer needed)
- Risk management
- Security policies (e.g., make sure that the IntelliSpace PACS 4.4 Service Documentation and media are securely stored)
- Contingency planning.

The practical implementation of technical security elements varies by site and may employ a number of technologies, including firewalls, virus scanning and anti-spyware software, authentication technologies, network segmentation (VLAN—XVirtual Local Area Network), etc.

As with any computer-based system, protection must be provided such that firewalls and/or other security devices are in place between the medical system and any externally accessible systems.

Although the system incorporates state-of-the-art protection mechanisms to protect it against the intrusion of malware (for example, viruses), a remote possibility remains that a system can become infected. System safety remains guaranteed in all circumstances, but the user might notice unfamiliar system behavior and/or performance. If this happens repeatedly, e.g. also after the system has been switched off and on again, the user is advised to contact a Philips Healthcare service representative to have the system checked and, if needed, to remove the malware.

The USA Veterans Administration has developed a widely used Medical Device Isolation Architecture for this purpose. Such perimeter and network defenses are essential elements in a comprehensive medical device security strategy.

Additional security and privacy information can be found on the Philips Healthcare product security web site at <http://www.philips.com/productsecurity>.

If you are interested in overviews of validated Security Patches:

- subscribe to the RSS Feed on this subject
- request an account that enables you to download documents illustrating the validation status for IntelliSpace PACS 4.4 and other Philips Healthcare products (to do so, navigate to the “Vulnerability Tables” section of the site).

Antivirus software is not provided with the IntelliSpace PACS 4.4 system. To protect the data stored in the IntelliSpace PACS 4.4 system, Philips recommends that you run antivirus software on any IntelliSpace PACS 4.4 server and all workstations, and keep the antivirus software up-to-date on any IntelliSpace PACS 4.4 server and all workstations.



WARNING

Philips Healthcare is not responsible for the installation or maintenance of antivirus software or for the integrity of the IntelliSpace PACS 4.4 system infected with a computer virus.

Philips Healthcare has qualified the following antivirus applications as being compatible with the IntelliSpace PACS 4.4 software:

- McAfee VirusScan Enterprise

Contact your Philips Healthcare service representative for information about qualified versions and configuring these applications so they do not affect IntelliSpace PACS 4.4 functionality or performance. For more details on security, please refer to the Appendix, Network safety, security and privacy in the Systems Administrator Guide.

**WARNING**

- When disposing of the hard drive, erase all sensitive privacy information.
- Media such as CDs, DVDs, and printouts need to be disposed of in a secure manner when they are no longer needed, since they might contain sensitive privacy information.
- It is the responsibility of the users to keep their password secret.
- It is advised to use TLS to secure the communications over TCP/IP networks.
- Users should guard their sessions and log off when they leave the IntelliSpace PACS 4.4 Server or Workstation.
- It is the responsibility of the user to guard removable media at all times.
- Make sure (patient) data is encrypted before transporting it out of the hospital facility.
- Philips recommends installing the validated and published security patches.
- Philips recommends making backup copies of configuration data, the database, and the archive as described in the System Administrator's Guide.
- Trained users are recommended to be careful when deleting patient or study data.
- External circumstances can influence the availability of the clinical data, e.g. network failure, power failures, environmental disasters, etc.

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Published in USA
4522 170 27901/730 * 2018-01-09 - en-US