

User's Manual

GEARView QC 2.1 Comprehensive QC Solution for PACS/EHR

PACSGEAR™

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GEARView QC

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Use of Fictitious Patient Data

Patient demographics appearing in this manual are examples only. No actual patient study data were used in the preparation of this manual. Any similarities to persons living or deceased is purely coincidental.



WARNINGS and Indications

- GEARView QC is intended to be used by healthcare personnel to review and edit medical images and related results.
- After editing DICOM patient orientation information, PACSGEAR strongly recommends that you visually verify patient orientation tags for accuracy.
- GEARView QC is not labeled for diagnostic use.
- After editing DICOM demographic information, PACSGEAR strongly recommends that you visually verify patient information for accuracy.
- After adding a mask, shutter, or marker to an image, series or study, PACSGEAR strongly recommends that you
 visually verify their placement before saving the changes.
- After rotating or flipping an image, series, or study, PACSGEAR strongly recommends that you visually verify the
 orientation before saving the changes.
- PACSGEAR displays measurement values from the modality that is responsible for generating the images. If the
 modality is incorrectly configured or defective, measurements may not be correct.
- PACSGEAR does not recommend using printed film for clinical diagnosis and/or direct measurements.
- Before using the 1x1 TRUESIZE option, verify that your printer supports this option by printing and comparing measurements from the original and copied films.



CAUTION

• **GEAR**View **QC** is not intended for the long-term storage or management of patient information or data. Please verify data integrity before deleting any original information from your PACS.



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Contents

1	Welcome	1
1.1	Starting and exiting GEARView QC	4
1.2	Licensing GEARView QC	4
1.3	Logging on for the first time	4
2	Settings Menu	5
2.1	Entering DICOM settings	6
2.2	Setting up folders	11
2.3	Setting up users	13
2.4	Switching languages	18
2.5	Audit logs	18
2.6	Other commands on the settings menu	19
2.7	Study locking	19
3	QC Operations	20
3.1	Workflow	20
3.2	Searching for studies	21
3.3	Retrieving studies	23
3.4	Editing studies from the Patient List tab	24
3.5	Editing studies in patient tabs	33
3.6	Editing images and series	38
3.7	Working in the Exceptions and Inbox folders	53
4	Saving and Sending Studies	55
4.1	Saving your changes	55
4.2	Sending studies	55
4.3	Deleting the original studies	55
5	Help Menu	56
6	Appendix	57
6.1	Keyboard shortcuts	57
6.2	Audit entries	58
6.3	Anonymized fields	59
6.4	UID change rules	60
6.5	Logged events	61
7	Support	62



1 Welcome



Congratulations on adding **GEAR**View[™] **QC** to your PACS/EHR system. **GEAR**View **QC** gives healthcare personnel a simple way to edit medical images and study details.

For more information, please contact us:

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Glossary of Terms and Symbols

The following terms and symbols are used in PACSGEAR manuals.

Consult instructions for use. Appears on the product CD.

Conformité Européenne. Indicates that the product complies with the

requirements of the 93/42/EEC Medical Device Directive.

Symbol for *manufacturer*.

Symbol for European authorized representative.

Click to view a video tutorial.

Caution. Messages that alert you to conditions that could result in equipment

failure, equipment damage, or data loss.

WARNING. Messages that alert you to conditions that could result in death or

serious injury.

Accession number A tracking or order number for patient studies.

AE Application entity. A local or remote DICOM service.

AMD Automatic marker detection. Automatic detection of markers to identify

mammography image orientation.

AST Auto segmentation technology. PACSGEAR's proprietary technology for

converting sectional films into a stack or cine loop.

Burner A digital recording device such as a CD recorder that stores data on media.

CR DICOM modality abbreviation for *computed radiography*.

DICOM Digital imaging and communications in medicine. A networking standard for

the medical industry.

DOB Date of birth.

DCA Dynamic contrast algorithm. PACSGEAR's proprietary technology for

displaying mammography film priors with a digital "look and feel."

DX DICOM modality abbreviation for *digital radiography*.

EMR Electronic medical records.

EHR Electronic health records.

HIPAA The Health Insurance Portability and Accountability Act. A law that stipulates

transferability of health insurance coverage, standardizes aspects of electronic medical records, and protects patient confidentiality with regard to

health information.

LDAP Lightweight directory access protocol. Used for looking up network services

and addresses.

Media Electronic storage media, such as CD-ROM and DVD.



MG DICOM modality abbreviation for *mammography*.

Modality Sources of data, such as from ultrasonography, MRI, PET, and CT.

MRN Medical record number. Sometimes referred to as the "patient ID number."

PACS Picture archival and communication system.

PacsSCAN General term for any of the PacsSCAN products (PacsSCAN Film,

Pacs**SCAN Video**, etc.)

PGMS PACSGEAR Media Server. Software that enables enhanced workflow,

optimized for video/audio distribution.

PIE PACSGEAR Image Exchange

PIES PACSGEAR Image Exchange Server

QC Quality control. A process of correcting errors and inconsistencies in imaging

studies.

RIS Radiology information system. A system used to order radiology studies.

UID Unique identifier. A manufacturer-specific identification string that is assigned

by modalities to images, series, or studies.

WADO Web Access to DICOM Objects. A service that makes DICOM images and

reports available via a Web browser.

Operating Procedure Conventions

Operating procedures employ the following conventions.

Convention Indicates

Boldface type Names of buttons.

Italic type Names of on-screen objects other than buttons (such as menu commands).

Courier font Text that the user types.

> Sequence of procedures.



1.1 Starting and exiting GEARView QC

Start and exit **GEAR**View **QC** as you would any Windows program. When starting, a splash screen appears with the product name. If the splash screen does not appear, please contact PACSGEAR Support.



CAUTION

GEARView **QC** contains many configuration, settings, and other files that can be edited by the user (for example, the xml files in the *config* folder of the installation directory). However, as such files are critical to proper functioning of the program, editing them is only recommended for experienced users. Contact PACSGEAR support if you have any questions about making changes to xml or other files.

1.2 Licensing GEARView QC

To start using **GEAR**View **QC**, you must obtain and enter a license key as follows.

- 1 Start **GEAR**View **QC**. If a license key has not been previously entered (such as the first time you run the program), the license key entry dialog box appears. Write down the value that appears in the *System ID* box. To display the dialog box manually at any time you can click *Help > About > Change*.
- 2 Request a license key by contacting PACSGEAR support via e-mail at key@pacsgear.com, telephone at +1 925 225 6100, or the support section of our Web site at www.pacsgear.com. Provide the following information to PACSGEAR:

Hospital Name, City, State, Country, Product Name, System ID, and Department/Workstation.

If your license is for Demo mode only, select the *Activate demo* check box.

3 Enter your license key and expiration date and click **OK**.

1.3 Logging on for the first time

After you have licensed the product, you will be prompted to log on the first time you start the program. The default logon is admin, with no password.



Settings Menu 2

GEARView QC includes a settings menu for configuring DICOM sources, setting up users, and accessing other useful commands. In particular, DICOM settings must be entered via the settings menu before using the program. If your administrator has already set up DICOM sources and users, you can skip to chapter 3, "QC Operations."

You can open the menu by clicking the settings button window.



at the upper right of the main application

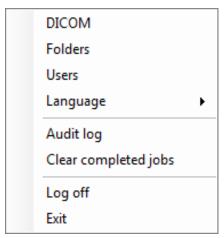


Figure 2.1 Settings menu

2.1 Entering DICOM settings 🕞

Before using the program, you must enter local settings for **GEAR**View **QC**, and DICOM settings for data sources and/or worklist providers.

In order for your PACS to recognize **GEAR**View **QC**, you may also be required to enter settings on your PACS such as AE Title, IP address, and port. Contact PACSGEAR technical support for details.

Procedure

On the settings menu, click *DICOM*.
 The DICOM Settings dialog box appears.

Local settings

Local AE title

Enter an AE title for GEARView QC

Capture raw bytes

Select to capture raw bytes. This feature is only for advanced troubleshooting, and should only be enabled if requested by PACSGEAR service personnel.

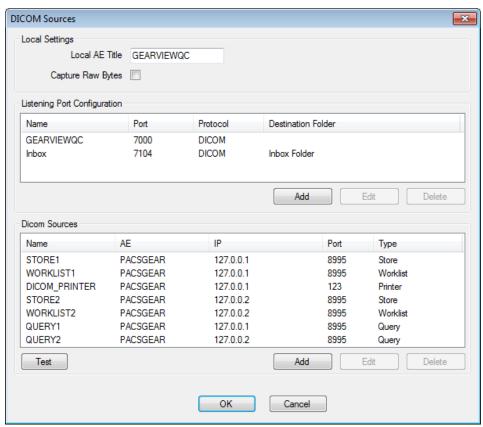


Figure 2.2 DICOM settings dialog box



Adding or editing a listening port

You can also specify "listening" ports on which **GEAR**View **QC** can receive studies that are sent to it from external sources. You can configure these ports so that incoming studies will be routed to specific folders such as the "Inbox" and "Exceptions" folders (see "3.7 Working in the Exceptions and Inbox Folders"). Note that an Exceptions folder does not need to be included in the listening port list (see the figure above). **GEAR**View **QC** routes exceptions automatically.

1. In the Listening Port area, click Add.

The Listening Port Configuration dialog box appears. Enter the settings described below and click **OK**.

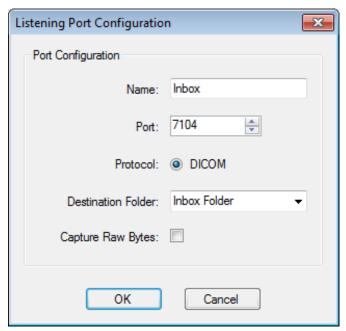


Figure 2.3 Listening Port Configuration dialog box

Name

Enter a name for the port.

Port

Type or select the port number.

Protocol

At this time, only DICOM is supported.

Destination Folder

Select a folder from the list into which incoming studies will be placed.

Capture Raw Bytes

Select to capture raw bytes. This feature is only for advanced troubleshooting, and should only be enabled if requested by PACSGEAR service personnel.

DICOM sources

Unless only using local data sources, you must configure your PACS or other archive as a data source from which to retrieve studies for QC.

Adding or editing a source

- In the DICOM Sources area, click Add, or select an existing source from the list and click Edit.
 The Add/Edit Source dialog box appears (see figure 2.4 below).
- In the Source area, enter or edit the relevant details for the source.
 The information in figure 2.4 below is only an example; consult with your PACS administrator for the correct settings for your PACS.
- 3. In the *Type* area, select one or more check boxes to specify how the source will be used.
- 4. Click OK.

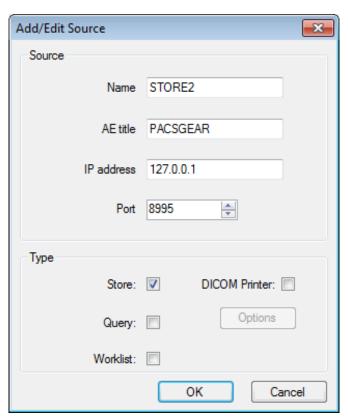


Figure 2.4 Add/Edit Source dialog box

Deleting a source

You can delete unused sources from the DICOM Settings dialog box.

1. Select a source, then click **Delete**.



Testing a connection to a source

You can test whether **GEAR**View **QC** is able to connect with and query an existing source. In the DICOM Settings dialog box:

- 1. Select a source.
- 2. Click Test.

The Test Results dialog box appears, indicating whether the test passed or failed.

3. Click OK.

If the test failed, check to make sure you entered the correct settings, or consult with your PACS administrator.

Entering DICOM printer optional settings

If you selected DICOM Printer for the type, you can enter optional settings for the printer.

1. Under *Type*, click **Options**.

The Edit DICOM Printer Options dialog box appears.

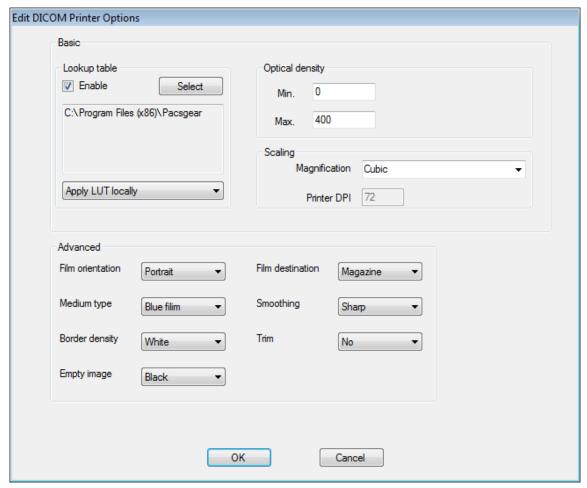


Figure 2.5 Edit DICOM Printer Options dialog box

2. Enter the settings described below, then click **OK**.



Basic

Lookup table

Enable

Select to have the printer reference a specific LUT (lookup table) for consistency between display

Select

Click to browse for and select an LUT.

List: Send LUT to printer

Select to send the LUT to the target printer.

List: Apply LUT locally

Select to apply the LUT to the current display.

Optical density

Min/Max

Enter the minimum and maximum values of optical density to which pixel values can be mapped. Adjust this setting according to the print medium.

Scaling

Magnification

None

Select to print images without magnification.

Cubic

Select to magnify the image using a cubic interpolation algorithm. This method usually yields the highest image quality, but can be slower than bilinear scaling.

Bilinear

Select to magnify the image using a bilinear interpolation algorithm. This method may not yield image quality as high as cubic scaling, but can be faster.

Printer DPI

Enter the printer output resolution in dots per inch to ensure proper magnification.

Advanced

Film orientation

Select Portrait or Landscape.

Medium type

Leave blank, or select *Clear Film* or *Blue Film* to match the print medium.

Border density

Leave blank for no border, or select *Black* or *White* for the desired border color.

Empty image

Leave blank, or select *Clear Film* or *Blue Film* to match the print medium.

Film destination

Leave blank, or select *Magazine*, *Processor*, or *Bin_1* through *Bin_5* (for sorters).

Smoothing

Enabled when Magnification is set to Cubic or Bilinear. Select Sharp, Smooth, or Medium to control the amount of smoothing.

Specifies whether to print a trim box around the film. Leave blank to use the printer's default setting, select Yes to include the trim box, or No to omit the trim box regardless of the printer's default setting.



2.2 Setting up folders

You can create folders to control how incoming and outgoing studies are routed. By default, **GEAR**View **QC** includes the Exceptions and Inbox folders. Incoming studies are routed to the Exceptions folder if they have been previously flagged as exceptions, typically due to having duplicate MRNs (or Patient IDs). This folder's attributes cannot be edited by the user. The Inbox folder is available to use for incoming studies, and can be edited by the user. To add or edit folders, follow the procedure below. Folders you create will appear in the Destination Folder list in the Listening Ports Configuration dialog box (see figure 2.6).

Procedure

1. Click Settings > Folders.

The Folders Setup dialog box appears.

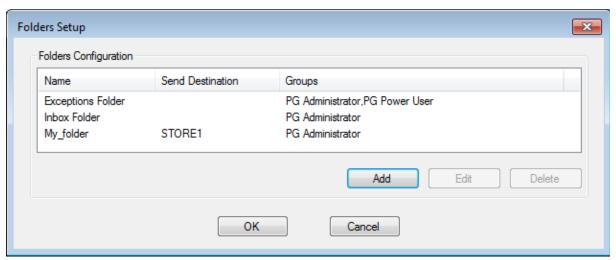


Figure 2.6 Folders Setup dialog box

- 2. To edit an existing folder, select it in the list and click **Edit**. To create a new folder, click **Add**. The Add/Edit Folders dialog box appears (see figure 2.7 below).
- 3. Enter the settings described below and click **OK**.

Folder Name

Enter a name for the folder.

Auto Send Destination

Select a destination from the list. When a study in the folder is reconciled or sent, it will be routed to the destination you specify here. The list is populated with any Store sources you set up in the DICOM settings. Select the blank destination to disable Auto Send.

Group with Access

Select a group to assign access privileges to the folder. You can select multiple groups.



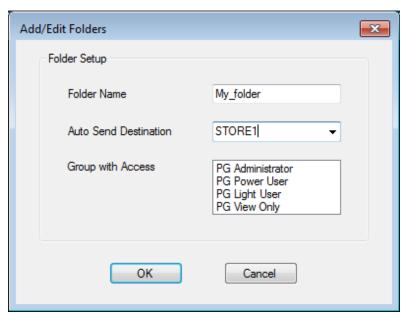


Figure 2.7 Add/Edit Folders dialog box



2.3 Setting up users 🕞

GEARView **QC** allows you to set up multiple program users, each with different logon passwords and administrator privileges. You can set up users either with Active Directory, or manually by entering local user information.

Procedure

1. On the settings menu, click *Users*.

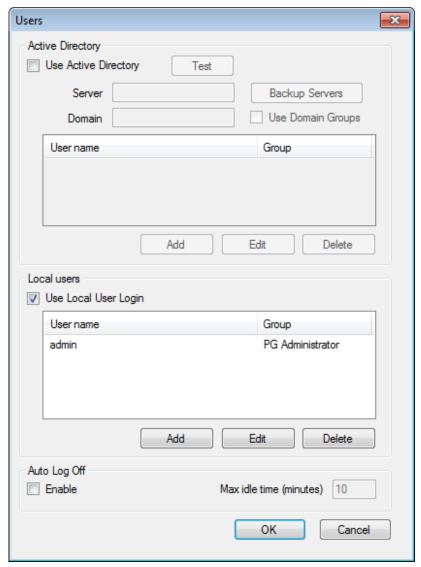


Figure 2.8 Users dialog box

2. Enter or select parameters based on the descriptions below, then click **OK**.



Active Directory

Active Directory stores user information on a server and acts like a phone book, providing a centralized logon service for Windows-based clients. If your PACS has an Active Directory server, you can use the procedure below to configure users. Otherwise, GEARView QC lets you set up and maintain local users with encrypted passwords.

- 1. Select the Use Active Directory check box.
- 2. In the Server box, type the name of the Active Directory server.
- 3. In the *Domain* box, type the server's domain name.

Backup Servers

If you have any backup servers for LDAP, you can click Backup Servers and enter their host names. GEARView QC will try each server in order if it fails to connect with the primary server entered above.

Use Domain Groups

If users on your LDAP are set up as members of domain groups, you can select this check box to reference those groups instead of individual users. Group names on the LDAP server must match group names defined in GVQC. If these groups are not available, clear the Use Domain Groups check box and use local groups.

Adding an Active Directory user

- 1. In the Active Directory area, click Add. The Add/Edit user dialog box appears.
- 2. In the *User name* box, type the user name.
- 3. In the *Group* list, select a user group (see the next page for information about groups). Click OK.

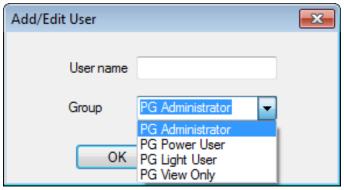


Figure 2.9 Add/Edit User dialog box (for Active Directory)

Deleting an Active Directory user

In the Active Directory area, select a user to delete and click Delete. Note that this does not actually delete the user from the Active Directory server, but simply removes the QC group association.



Testing an Active Directory user's password

- 1. In the Active Directory area, select the user whose password you wish to test.
- 2. Click Test.
- 3. In the *Password* box, type the password and click **OK**.

 A message appears indicating whether the password was entered and identified correctly.
 - *Note that the test does not apply to backup servers.

User groups

User groups let you assign a predetermined set of privileges to each user. **GEAR**View **QC** comes standard with the four user groups shown in figure 2.9 (PG Administrator, PG Power User, PG Light User, and PG View Only), but you can add to, edit, or delete any of these names and the privileges associated with them. Note that you must unify **GEAR**View **QC**'s user groups with those set up on your LDAP server, if available.

Editing user groups

- In Windows, navigate to Program Files > PACSGEAR > GEARView QC > Service > config.
- 2. Open the file, group_privileges.xml in Notepad or another XML editor.
- 3. Edit the file as needed according to the notes below.



Incorrectly editing this file, especially the tags, can result in improper operation of the program. Contact PACSGEAR support if you have any questions about how to edit this file.

```
group_privileges - Notepad
                                                                                                         _ - X
<u>File Edit Format View</u>
<?xml version="1.0" encoding="utf-8"?>
<user_groups>
   <group>
                                                                                                                         Ξ
      <group_name>Admin</group_name>
      <group_priliveleges>
          <pri><privilege_list name="Patient List">
             <pri><privilege_list name="Patient Level">
                <list_item>View Patient</list_item>
                <list_item>Edit Patient </list_item>
<list_item>Edit Patient Details
                                                                       Advanced</list_item>
                st_item>Edit Patient Details
                <list_item>Anonymize Patient</list_item>
                <list_item>Copy Patient </list_item>
<list_item>Create New Patient</list_item>
                <list_item>Delete Patient</list_item>
                <list_item>DICOM Send All Studies</list_item>
             <list_item>Reconcile Patient</list_item>
  t_item>Retrieve Patient</list_item>
</privilege_list>
             <privilege_list name="Study Level">

<iist_item>View Study</list_item>
<list_item>Edit Study</list_item>
<list_item>Edit Study Details
list_item>Edit Study Details
Advanced</list_item>

                t_item>Anonymize Study</list_item>
                <list_item>Copy Study</list_item>
                <list_item>Create New Study</list_item>
                <list_item>Delete Study</list_item>
                <list_item>DICOM Print</list_item>
```

Figure 2.10 Editing the group privileges.xml file in Notepad



<group_name>

The group names that appear in the Group lists in GEARView QC. Edit the name to change it. To add a new group, highlight all text from and including a <group> tag through and including the next nearest </group> tag, copy the selection, click an insertion point just after the </group> tag, then paste. Edit the pasted text as desired for the new group.

tist item>

Each list item corresponds to a command in a shortcut menu. Copy or delete list items to add or remove privileges from the user group.

Local users

If your PACS does not support Active Directory, of if you prefer not to use it, you can configure local users with the procedure below. Note that you cannot use both Active Directory and local users during the same session.

1. Select the Use local user login check box.

Adding a local user

1. In the Local users area, click Add. The Add/Edit User dialog box appears.



Figure 2.11 Add/Edit User dialog box (for local users)

- 2. In the Group list, select a group for the user.
- 3. In the *User name* box, type the name of the new user. In the Password box, type the user's password. In the Confirm password box, retype the password.
- 4. Click OK.

The new user appears in the Local users area of the Users dialog box.



Editing a local user

- In the Local users area, under User name, select a user name and click Edit.
 The Add/Edit dialog box above appears.
- 2. Edit the information in the boxes and click **OK**.

Deleting a local user

1. In the *Local Users* area, under *User name*, select a user name and click **Delete**.

Auto log off

Select the *Enable* check box to force a log off if the system remains idle for the specified number of minutes.



Switching languages

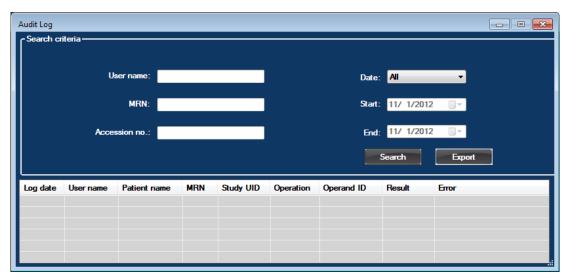
The program's user interface can be displayed in English, French, German, Portuguese, or Spanish.

- 1. On the Settings menu, click Language.
- 2. Select the desired language from the sub menu.

Audit logs 2.5

PACSGEAR's audit logs contain detailed information about the application and how it has been used. User messages contain time-stamped access and action information that can be used to address HIPAA concerns.

1. On the settings menu, click Audit log. To view a message in an audit log, simply click the log to view its contents.



Searching for audit logs

Figure 2.12 Audit Log dialog box

You can search for particular logs by entering or selecting one or more of the available search criteria then clicking Search. All logs matching the search criteria appear in the list in the lower part of the Audit Log screen.

Exporting audit logs

After finding a particular log, you can export it by clicking the Export button. Logs are saved to a specified location in .csv format.



2.6 Other commands on the settings menu

Clear completed jobs

Clears all information from the jobs area of the main window.

Log off

Logs off of the **GEAR**View **QC** server without exiting the program.

Exit

Exits GEARView QC.

2.7 Study locking

GEARView **QC** "locks" studies that are opened in patient tabs to ensure that they cannot be opened or edited by more than one user at a time. If **GEAR**View **QC** is prematurely shut down during an edit, the study remains locked and cannot be opened again when the client is restarted. However, in such cases **GEAR**View **QC** adds a "Force Unlock To Edit" command to the shortcut menu of the locked study. Clicking the command unlocks the study, and allows you to edit it in the patient tab.

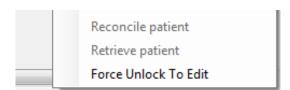


Figure 2.13 Unlock command added to the study shortcut menu



QC Operations

3.1 Workflow

Once DICOM sources have been configured, you are ready to begin using the program. The figure below shows a typical workflow that can be followed when using GEARView~QC.

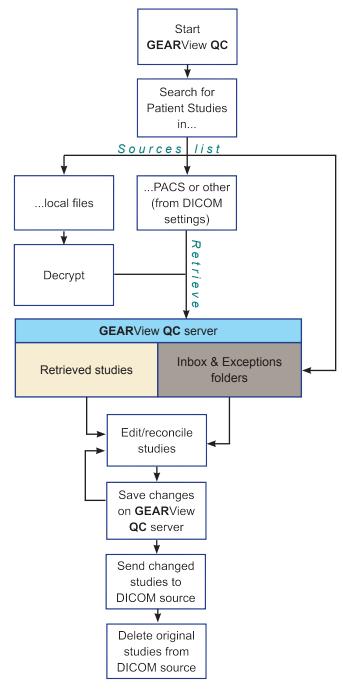


Figure 3.1 Typical workflow



Searching for studies (>)

When GEARView QC first opens, the Patient List tab is displayed. In this tab you will typically search for studies in PACS or other sources, retrieve them to the GEARView QC server, make any necessary edits (in this tab and in the patient tabs), return the changed studies back to their source of origin, and delete the old studies from the source of origin.

1. Select one of the following sources in the Source list.



Figure 3.2 Source list

[User defined]

A storage or query source you configured in the DICOM Settings dialog box (as an example, the "PACS1" source in figure 3.2)

Local DICOM files

A local source such as the hard drive or CD-ROM drive .



Note: The Exceptions Folder, Inbox Folder, and GEARView QC options are discussed elsewhere in this manual. Do not select them during this step.

- 2. Enter zero* or more search criteria in the Patient name, MRN, Date of birth, and/or Accession no. boxes. You can also select one or more criteria in the Modality and Study date/time lists.
 - *Note: If you select All in the Modality and Study date/time lists, you must enter a criterion in at least one of the boxes.
- 3. Click **Search** or press **Enter** to search for patient studies.

The search results are displayed in the Patient List tab.

Search Syntax Patient name Enter one or more of the first characters in the last name (no asterisk required). MRN Enter the exact number, or any number of the first characters followed by an asterisk. Accession no. Enter the exact number, or any number of the first characters followed by an asterisk. Date of birth Use the date picker to enter a date.



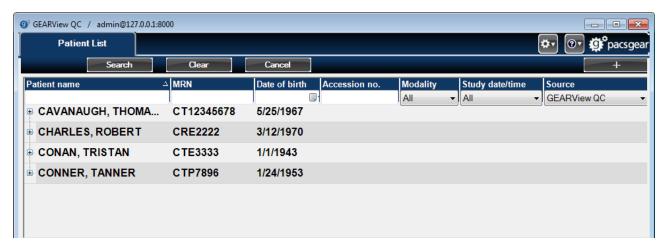


Figure 3.3 Patient List tab

Sorting studies

Click a column header to sort the information in ascending or descending order. A triangle appears next to the name of the column that currently determines the sort order. The triangle points up for ascending and down for descending.

Encapsulated PDFs

DICOM compatible encapsulated PDFs can be opened from any source. When viewing encapsulated PDFs, GEARView QC displays scroll bars and paging buttons for navigating multipage files, as well as a context menu with the following commands.

Zoom

Zooms the image by the selected amount.

Image details

Opens the image details window in figure 3.9.

Export

Lets you export all or portions of the study to PDF or DICOM.

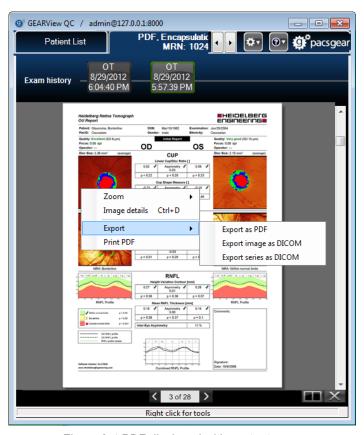


Figure 3.4 PDF displayed with context menu



3.3 Retrieving studies

Studies from sources other than the **GEAR**View **QC** server can be viewed but not edited. Therefore you must "retrieve" (copy) any studies that you intend to modify from the source of origin to the **GEAR**View **QC** server.

- 1. In the *Patient List* tab, right-click the name of the study you wish to retrieve.
- 2. In the context menu, click Retrieve study.

Alternately, you can right-click the patient name and click *Retrieve patient* in the context menu. This retrieves all studies for the patient. **GEAR**View **QC** begins retrieving the studies, and the status is displayed in the job queue. Repeat this step until you have retrieved all studies of interest.

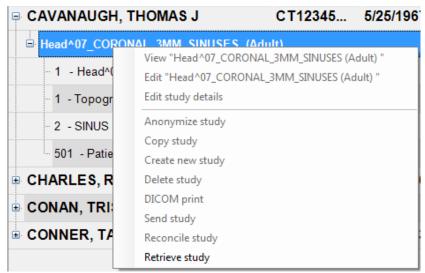


Figure 3.5 Retrieve study command in the study context menu

Viewing the contents of the GEARView QC server

Perform the following steps to view all of the studies you have retrieved onto the **GEAR**View **QC** server.

- 1. In the Source list, select GEARView QC.
- 2. Click **Clear** to clear all search criteria, then click **Search**. (Or enter search criteria to search for specific studies.)

The studies appear in the Patient List tab. You can now perform editing and other QC operations.



Editing studies from the Patient List tab

Many common QC tasks can be performed in the Patient List tab. Additional tasks can be performed in the patient tabs described in section 3.5.

Note: Any actions described in this chapter that affect studies or series of 200 or more images may require extended wait periods.

Reassigning studies and series

You can reassign studies and series simply by dragging them within the Patient List tab. Studies can be dragged to other studies, or series to other studies or patients. When dragging, a confirmation dialog box is displayed when you release the mouse button. Choose whether to move or copy the study or series. Note that the terms move and copy can be misleading because the DICOM tags of the moved or copied items are not identical to the original. That is, GEARView QC reats the series initially as "Unassigned," and changes certain DICOM tags accordingly. You can assign the series by dragging it to another study within the patient list. If all series are moved out of an unassigned study, the study disappears. When series are reassigned, the associated DICOM tags are updated automatically. However, you can make additional edits if needed using the Edit patient/study details context menu.

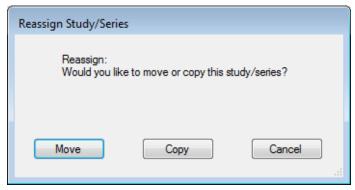


Figure 3.6 Reassign confirmation dialog box

Adding a patient

You can manually add a new patient study to the GEARView QC server.

1. On the main screen above the Source list, click the add button.



Figure 3.7 Add button

The Edit Details dialog box in figure 3.9 appears, except that the name field shows "New Patient Record" and the patient ID box is filled in automatically with a new, unused ID.

2. Follow the instructions below under Edit Patient Details to enter patient information.



Patient context menu

Many other QC tasks can be performed by right-clicking a patient name. The patient context menu contains the following commands.

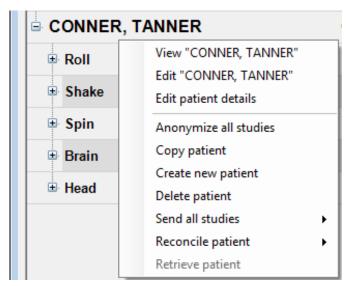


Figure 3.8 Patient list context menu

View [patient]

Opens the corresponding patient tab with the first study of the patient displayed.



 After editing DICOM demographic information, PACSGEAR strongly recommends that you visually verify patient information for accuracy.

Edit [patient]

Same as the View command above, but enables editing commands in the patient tab shortcut menus.

Edit patient details (>)



fields and click OK. If desired, select the Create new series/image UIDs check box to create new unique identifiers for the items being edited.





Figure 3.9 Edit details (simple) dialog box

Advanced

Click Advanced to display an edit screen with all available fields (see figure 3.10 below). You can search for relevant information by entering a criterion in the Find box and clicking Find next. You can also right-click any row and click Edit tag or Delete tag in the context menu.

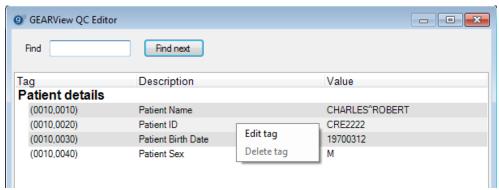


Figure 3.10 Edit details (advanced) dialog box

Edit tag

Opens the Add/Edit Tag dialog box (see figure 3.11 below). Edit the tag values as desired and click OK. Note that the fields available for editing differ depending on the tag value selected.

Deletes the tag from the patient details.



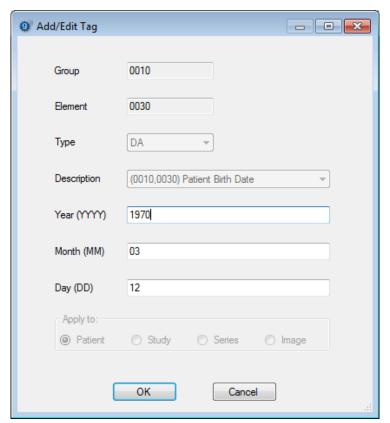


Figure 3.11 Add/Edit Tag dialog box

Special Note: Editing Patient Orientation Tags

GEARView **QC** displays patient orientation tags on image thumbnails differently than they appear in the Patient Details dialog box. In the example below, the value of the patient orientation tag is "P\F" (meaning, "the right edge of the image is toward the *Posterior*, and the bottom edge is toward the *Foot*") but it appears in the thumbnail as "H\A" (meaning, "the top edge of the image is toward the *Head*, and the left edge is toward the *Anterior*," see figure 3.13).



Figure 3.12 Patient Orientation tag with or value of "P\F", corresponding to the right and bottom edges of the image

The standard tag value indicates the *right* and *bottom* edge of the image, but **GEAR**View **QC** displays the complementary values in the *left* and *top* edges of the image. Therefore when editing the tag, you must remember to use the complementary values of what you wish to display.



After editing DICOM patient orientation information, PACSGEAR strongly recommends that you visually verify patient orientation tags for accuracy.



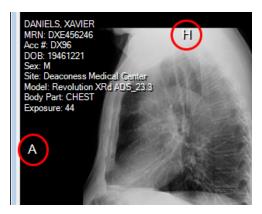


Figure 3.13 The tag's complementary values are displayed on the left and top edges of the image

Complementary Values

Ρ Α Ρ Α R R L F Н Н

Anonymize all studies (>)

Creates anonymized copies of all studies under the selected patient and displays them at the top of the patient list under the name "Anon[number]."

Copy patient (>)

Creates a copy of the patient and all studies of the patient in the Patient List tab. The copy is given a new MRN by the program.

Create new patient

Opens the Edit Details dialog box in figure 3.9. Type or select patient details, then click **OK**. The new patient appears in the Patient List tab.

Delete patient

Deletes the patient and all associated studies from the GEARView QC server. None of the original data on the source of origin is affected.

Send all studies

Sends the patient and all associated studies to their DICOM source of origin. Use this command when you are finished with QC tasks for the patient on the GEARView QC server. If more than one store source exists in the Source list, a submenu becomes available for choosing the desired source.



Take care to choose the correct source: if you choose a different source than the source of origin, the original unedited study will remain on one source, with the newly edited study on a different source.

Reconcile patient (>)

Click to open the Reconcile Patient screen. In this screen, you can copy the patient information directly from a modality worklist server to simplify data entry and ensure accuracy.

Note: The Reconcile patient command is only available if a worklist source has been specified in the DICOM settings.



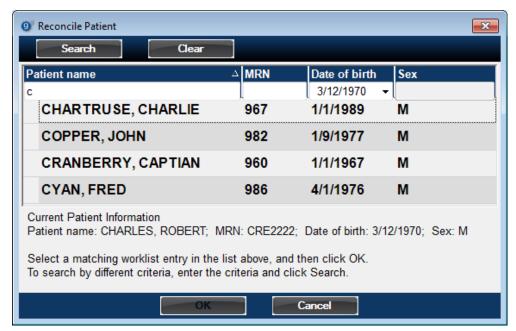


Figure 3.14 Reconcile Patient screen

To search for a patient from which to copy information, enter search criteria in the *Patient name*, *MRN*, and/or *Date of birth* boxes and press **Enter** or click **Search**. Any matches found are listed below the search criteria boxes.

Select the correct patient from the list of matches and click **OK**. The patient information is copied to the original patient in the Patient List tab.

Note: The patient's sex is not available as a search criterion but is displayed for convenience.

Retrieve patient

Sends the patient to the **GEAR**View **QC** server. This command is not available when currently viewing the contents of the **GEAR**View **QC** server.



Study context menu

The study context menu contains the following commands.

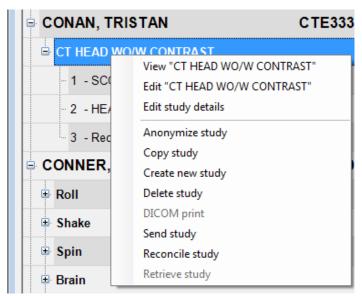


Figure 3.15 Study context menu

View [study]

Opens the corresponding patient tab, with the selected study displayed.

Edit [study]

Same as the View command above, but enables editing commands in the patient tab shortcut menus.

Edit study details

Same as the simple Edit Details dialog box in figure 3.8, except that it applies to studies.

Same as the advanced Edit Details dialog box in figure 3.9, except that it applies to studies.

Anonymize study

Creates an anonymized copy of the selected study and displays it at the top of the Patient List tab under the name "Anon[number]."

Copy study

Creates a non-anonymized copy of the study.

Create new study

Opens the Edit Details dialog box in figure 3.9, but leaves all fields unassigned. Fill in fields as desired and click **OK** to create the new study.

Delete study

Deletes the selected study.

DICOM print

Sends the study directly to a DICOM printer (see DICOM Print).

Send study (>)

Sends the study to a DICOM source. Use this command when you are finished with QC tasks for the study on the GEARView QC server.



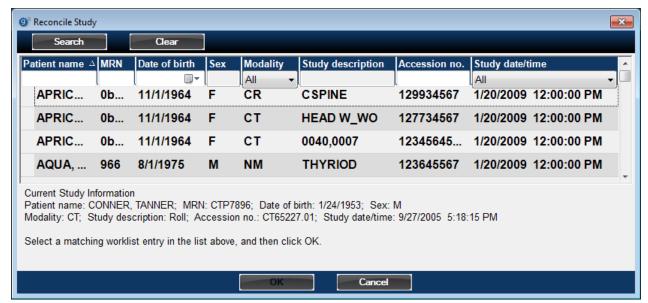


Figure 3.16 Reconcile Study screen

Reconcile study

Same as for Reconcile Patient, except that additional study-specific search fields are available.

Retrieve study

Sends the study to the **GEAR**View **QC** server. This command is not available when currently viewing the contents of the **GEAR**View **QC** server.



Series context menu

The series context menu contains the following commands.

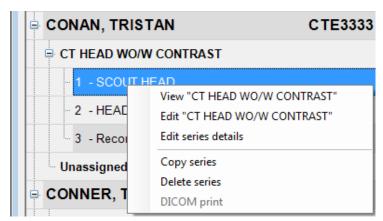


Figure 3.17 Series context menu

View [series]

Opens the corresponding patient tab, with the selected series displayed.

Edit [series]

Same as the View command above, but enables editing commands in the patient tab shortcut menus.

Edit series details

Same as Edit study details, but with series-specific fields and tags displayed.

Copy series

Creates a copy of the series.

Delete series

Deletes the series from the study.

DICOM print

Sends the series directly to a DICOM printer (see DICOM Print).

Job queue

The job queue at the bottom of the Patient List tab displays details of jobs in progress. A job refers to a study that is being sent from a DICOM source to GEARView QC, or vice versa.

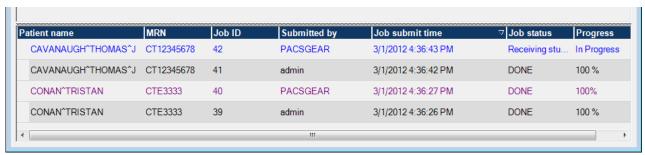


Figure 3.18 Job queue



3.5 Editing studies in patient tabs

Opening patient tabs

Double-click a series, study, or patient in the Patient List tab. The corresponding patient tab opens. Any number of patient tabs can be open at the same time, depending on your PC memory.

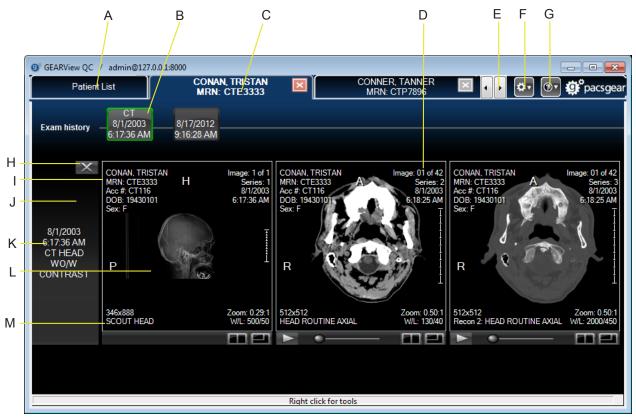


Figure 3.19 Patient tabs

Parts of the patient tab and program screen

The contents of the patient tabs and other parts of the program screen are described as follows.

- A Patient List tab. Click to display the patient list.
- **B** Exam history icon. An icon is displayed for each exam (study) associated with the patient. Each icon shows the modality (VL, MR, CT, etc.) and date/time of the exam. The icons appear in order by date/time, with most recent studies first. Click an icon to display a new exam strip containing all series in the exam. If an opened exam strip is off screen, you can jump to it by clicking its exam history icon. You can also delete a study by clicking its exam history icon and pressing the Delete key on the PC.
- **C** Patient tab. To switch between opened patient tabs, simply click the desired tab. If a particular exam strip is not displayed in the tab, click one or more of the exam history icons.
- **D** An overlay of the number of the currently displayed image. If a series contains multiple images, you can scroll through the images using the mouse wheel.
- **E** Tab scroll buttons. Click to move open tabs to the left or right.
- **F** The settings menu. Click to view available commands.



- G Help menu. Click to view the user's manual, view or change the license, or to switch display languages.
- H Close button. Click to close the exam strip. At any time you can reopen the exam by clicking its exam history icon.
- 1 An overlay of the main study information.
- J Exam strip. The horizontal strip containing a header (K) and all series thumbnails (L) in an exam.
- K Exam header. Contains exam information (the date/time and name of the exam). Right-click this area to open a context menu containing commands described elsewhere in this manual. Double-click to open the Image details window.

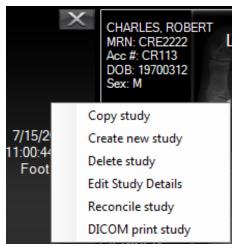


Figure 3.20 Exam strip context menu

- L Series thumbnail (hereinafter, thumbnail). Each exam contains one or more series, and each series contains one or more images. Each series is shown as a thumbnail in the exam strip.
- **M** An overlay of the size of the currently displayed image (in pixels).

Overlays

The text that is superimposed over images, such as in D, I, and M above, is called an overlay. To display or hide overlays, right-click a thumbnail and click Text On/Off, or click a thumbnail and press the A keyboard shortcut.



Reassigning studies and series

Like the Patient List tab, the patient tabs allow drag-and-drop reassigning of studies and series. You can drag series and studies in a variety of ways.

A You can drag exam history icons to other exam history icons, patient tabs, studies, and series.

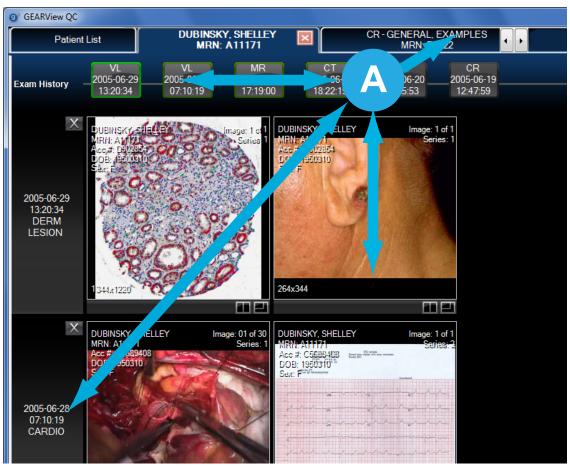


Figure 3.21 Dragging exam history icons



B You can drag entire studies to exam history icons, patient tabs, and other studies.



Figure 3.22 Dragging studies



C You can drag series to exam history icons, patient tabs, studies, and other series.

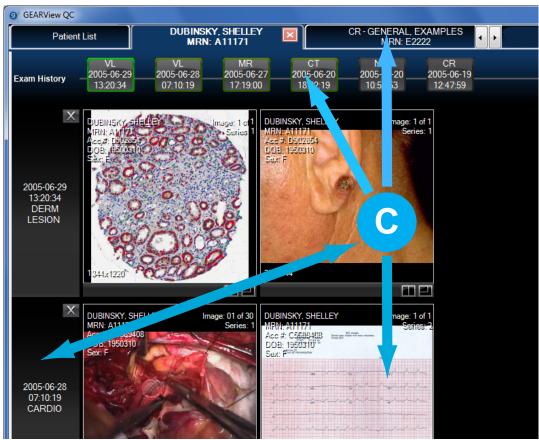


Figure 3.23 Dragging series

Moving or copying a study or series in the patient tabs is equivalent to reassigning the study or series as described in section 3.4. The new series is initially "unassigned."

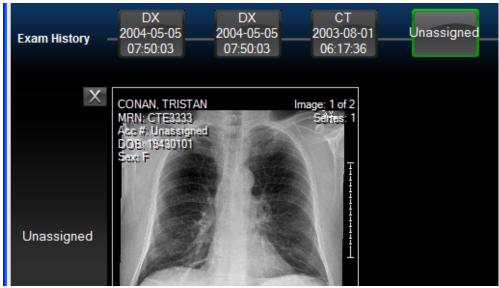


Figure 3.24 Unassigned study



Editing images and series

Viewing and manipulating images

GEARView QC provides you with convenient tools to view and manipulate images. The tools available differ depending on the type of image.

Window controls

The following window controls are available.

Full screen

To open an image in a full-screen viewport, double-click its thumbnail in the exam strip or click the Full screen button (figure 3.25 B).

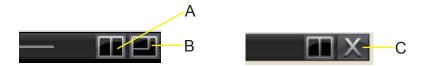


Figure 3.25 A: Compare button; B: Full screen button; and C: Close button. The Close button is only visible if the image is displayed in Compare or Full Screen viewport.

Compare

Click the Compare button (figure 3.25 A) to open the image in a half-screen viewport. Click the Compare button of a second image to open the second image in a half-screen viewport in the other half of the screen. This enables easy comparisons of two images.



Figure 3.26 Compare view



Linking series

When two series are opened in compare viewports, their scrolling behavior becomes *linked* by default if they satisfy two conditions: 1) the series are from the same exam; and 2) the series reside on the same plane (as determined by the relevant DICOM patient orientation tags). When two series are linked, scrolling performed by the user on one of the series is likewise applied, to the extent possible, in the other series. Linked series are identified by the word "Linked" appearing at the lower left of each series. When linking is enabled, a "Link "command appears in each series' context menu that allows you to turn linking ON and OFF (see figure 3.27 below).



Figure 3.27 Linked series

Close

Any time an image is opened in a full-screen or compare viewport you can return to thumbnail view by double-clicking the image again, or by clicking its Close button (see figure 3.25 C).

Cine images

This button is only available if the series contains more than one image (see figure 3.28 A below). Click to automatically cine through all images in the series. After clicking, the button changes to a Pause button. Click **Pause** to pause the cine. You can also press C on the keyboard to Cine/Pause images.

Cine slider

This slider is only available if the series contains more than one image (see figure 3.28 B). Drag the slider to the right or left to manually cine forwards or backwards through images in the series. You can also rotate the mouse wheel.



Figure 3.28 A: Cine images button; and B: Cine slider

MPEG controls

These controls are available when viewing MPEG files (see figure 3.29).

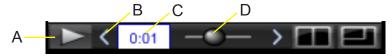


Figure 3.29 A: Video playback; B: move back/forward one frame; C: time display; and D: scrub control



Paging

When a structured report (modality = SR) or encapsulated PDF is opened in a full-screen viewport, two buttons appear at the bottom of the screen for paging the report forward and backward.

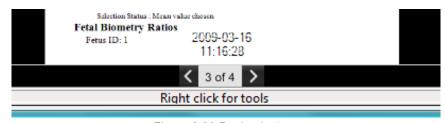


Figure 3.30 Paging buttons

Mammography mode

When a mammography study (modality = MG) is opened in a compare viewport, using the left/right arrow keys will advance to the next two linked mammography series with matching laterality (for example, RMLO/LMLO to RCC/LCC).

Thumbnail context menu commands

You can right-click any thumbnail in an exam strip to open the context menu in figure 3.31.

Reset

Resets rotation to none, window/level to its original values from the DICOM file, and the invert state, and clears all measurements.

Tools

See Tools context menu below.

Flip/rotate

See Flip/rotate context menu below.

See Layout context menu below. This command is only available in a viewport.

Text On/Off

Displays or hides the text overlay.

Scout On/Off

Displays or hides scout lines. When turned On, scout lines appear in one or more series that are perpendicular to the series you point to with the mouse.

Window/level presets

See Window/level presets context menu below.

Opens a window that displays patient, study, and other information associated with the image. Each piece of information corresponds to standardized DICOM fields, and is accompanied by the relevant

To search for information, type a keyword in the Find box and click Find next as many times as is necessary to jump to the desired item.

Enables you to save the selected image to a specified folder as JPEG or DICOM (*.dcm) files. However, if the image is an encapsulated PDF, the JPEG option is replaced with PDF.

Opens a print dialog box for printing the selected image.



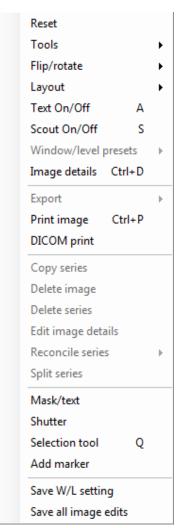


Figure 3.31 Context menu for images and series in studies. Note: Some commands are only available if the image resides on the GEARView QC server.

DICOM print

See **DICOM** Print below.

Copy series

Creates a copy of the series.

Delete image

Deletes the current image. If deleting from a series, only the currently displayed image is deleted. If the series contains only one image, the Delete image command is unavailable.

Delete series

Deletes the current series. Note that you can also delete series by clicking the series and pressing the Delete key on the PC.

Edit image details

Same as the Advanced editing screen described in figure 3.9, with the following two features added.

Show private groups

Select this check box to display only user specified details.

Add

Click this button to display the Add/Edit Tag dialog box (the same as figure 3.10 except that the fields are blank until you enter new information).



Adding Private Tags

If you need to associate information with studies that is not supported by standard DICOM tags, you can create a private tag. To distinguish a private tag from a standard one, you must use an odd number for the group number.

Reconcile series

Same as Reconcile study, but with series-specific search criteria.

Split series (>)

Splits the current series at the current image. A new series thumbnail is created to the right of the original one. The original series contains all images up to and including the split point, and the new thumbnail contains all images after the split point.

Mask/text

See Mask/text below.

Shutter

See Shutter below.

Selection tool

Switches the cursor to the standard pointer to allow dragging.

Add marker

See Add marker below.

Save W/L

Locally saves any unsaved window/level edits to the image.

Save all image edits

Locally saves all edits to the image.



Tools context menu

Window/level

Changes the cursor to the window/level cursor. Drag the cursor horizontally or vertically over an image or thumbnail to adjust the window or level, respectively.

Zoom

Changes the cursor to the zoom cursor. Drag the cursor vertically over an image or thumbnail to zoom in or out.

Pan

Changes the cursor to the pan cursor. Drag the pan cursor over an image or thumbnail to pan (drag) the image in any direction. Note that you can only pan left and right in the full-screen viewport. Note that the edges of images cannot be panned beyond the edges of the viewport.

Cine

Select this command to cine through images in a series. This command only works if the series contains more than one image.

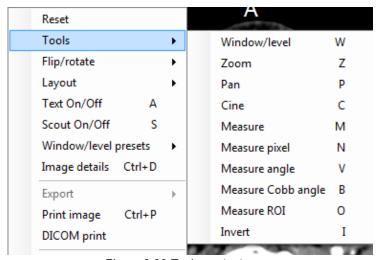


Figure 3.32 Tools context menu



• PACSGEAR displays measurement values from the modality that is responsible for generating the images. If the modality is incorrectly configured or defective, measurements may not be correct.

Measure

After selecting this command, click two points on the image in succession: a start point and an end point. A line appears between the two points with the distance between them measured in units of millimeters. After the first line is displayed, you can move either of the two points to new locations in order to measure new distances. To delete a line, place the pointer over an endpoint so that the line turns yellow, then press the **Delete** key.



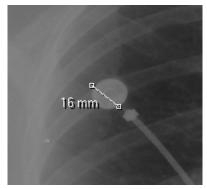


Figure 3.33 Use the Measure tool to measure portions of an image

Measure pixel

After selecting this command, click and hold down the mouse button over any point on the image to display the pixel value at that point. One value is shown for grayscale images, and three points are shown (R, G, and B) for color images.

Measure angle

After selecting this command, click three points on the image in succession: a start point, a vertex, and an end point. Lines appear between the vertex and start and end points, and the resultant angle is displayed in units of degrees (see figure 3.34 below). After the first angle is displayed, you can move any of the three points to new locations in order to measure new angles.



Figure 3.34 Use the Measure Angle tool to measure angles in images

Measure Cobb angle

After selecting this command, click four points on the image in succession: a start and end point for line 1, and a start and end point for line 2. The two lines appear along with a third line between the first two lines, and the Cobb angle is displayed (the angle formed by the first two lines where the vertex is assumed).



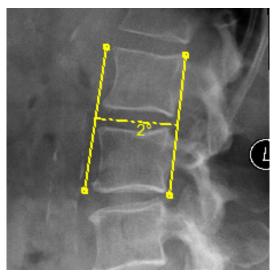


Figure 3.35 Use the Measure Cobb angle tool to measure angles in images

Measure ROI

After selecting this command, click and drag on the image to create, size, and shape an ellipse around the region of interest. The ellipse's area is displayed along with that area's average pixel value and standard deviation of pixel values.

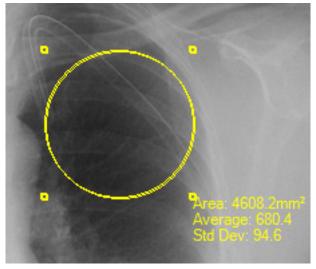


Figure 3.36 Measuring with the ROI tool

Invert

Inverts black and white values on grayscale images. Has no effect on color images.



• After rotating or flipping an image, series, or study, PACSGEAR strongly recommends that you visually verify the orientation before saving the changes.



Flip/rotate context menu

Rotate right 90

Rotates the image or thumbnail ninety degrees clockwise

Rotate left 90

Rotates the image or thumbnail ninety degrees counterclockwise

Rotate 180

Rotates the image or thumbnail one hundred and eighty degrees

Flips the image horizontally (on its vertical axis)

Flip vertical

Flips the image vertically (on its horizontal axis)

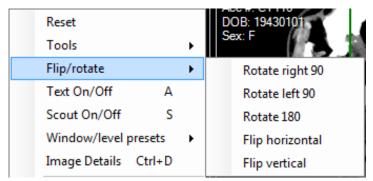


Figure 3.37 Flip/rotate context menu

Layout context menu

The Layout context menu is only available when the study is displayed in a viewport, and is useful only if there is more than one slice (image) in the series. Select 1 x 1, 2 x 2, or 3 x 3 from the submenu to display a "tiled" layout of slices. Use the Up/Down arrow keys or mouse wheel to scroll slices one-by-one through the tiles, or use the Page Up/Page Down keys to scroll them screen-by-screen.

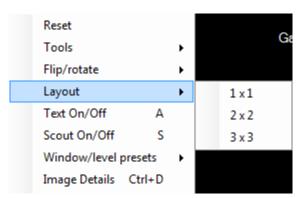


Figure 3.38 Layout command with submenu

If there are not enough slices to fill the layout, portions of the layout are left blank.





Figure 3.39 A 3 x 3 layout

Window/level presets context menu

The Window/level presets context menu contains a submenu with a selection of preset window/level values appropriate for different body parts or viewing objectives. The presets available differ depending on the image/modality, and they can be edited in the presets.xml file in the **GEAR**View **QC** installation directory.

You can choose the preset most appropriate for your image, and then fine-tune the window/level setting as desired by using the Window/level tool described above. Notice that the menu includes lookup table (LUT) settings if the image is in color.

Image details

Displays the Image details screen (figure 3.41 below).

Show private groups

Select this check box to display only "private" (user specified) tags.



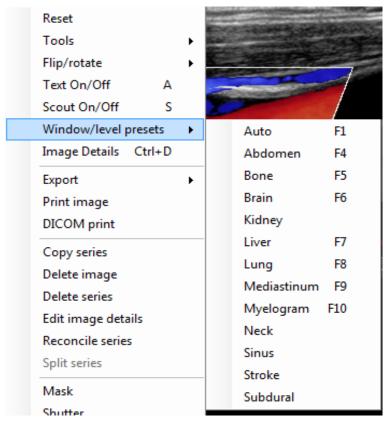


Figure 3.40 An example of a possible Window/level preset submenu

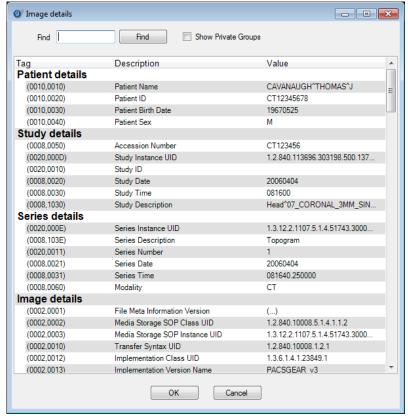


Figure 3.41 Image details screen





 After adding a mask, shutter, or marker to an image, series or study, PACSGEAR strongly recommends that you visually verify their placement before saving the changes.

Mask/text

Enables you to mask portions of images, for example to anonymize a study by hiding any patient demographics burned into the images. Select the command in the context submenu, and drag a rectangle on the portion of the image you wish to mask. A confirmation message appears prompting whether or not to apply the mask to all images in the series.

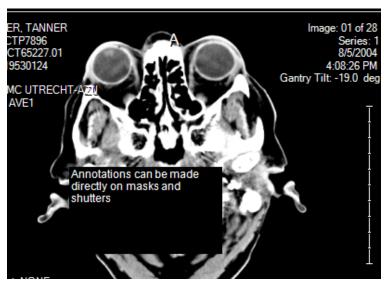


Figure 3.42 Mask applied to a CT image

Annotating masks

You can type annotations directly on masks. To enter text the first time, double-click the mask to switch to annotation mode, then type the desired text. To add to or edit existing text, single-click the mask then click anywhere in the text to specify an insertion point.

Note

- Moving the cursor outside of the mask cancels annotation mode.
- Text does not wrap within the mask. Use carriage returns as needed.
- Text cannot be added to masks that have already been saved.
- The font size scales with the image zoom level.

Changing fonts

Click a mask to select it, then right-click and select *Choose font* from the context menu. A dialog box appears in which you can adjust the font, style, and size of the annotations.



Shutter (>)

Similar to the mask, but typically used to "shutter" portions of images. Drag on the image to select the area of interest. All portions of the image outside of the selected area are shuttered. A confirmation message appears prompting whether or not to apply the shutter to all images in the series.

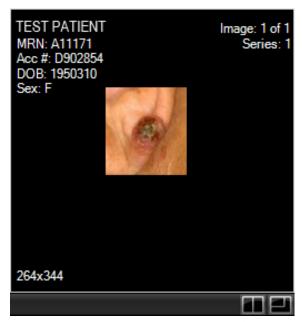


Figure 3.43 Use the shutter to hide portions outside of the area of interest

Add marker

Displays markers that can be placed on an image, for example to correct a mistakenly placed Left/Right marker.

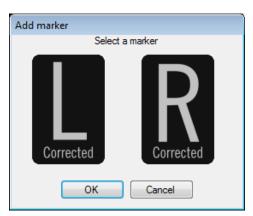




Figure 3.44 Select a marker and click OK to place it on the image, then move or resize it as needed

Creating custom markers

You can create your own markers and have them appear in the Add Marker dialog box. Simply create your marker in .gif format, and save the file in the ... GEARView QC/Client/config/markers/ directory.





- PACSGEAR does not recommend using printed film for clinical diagnosis and/or direct measurements.
- Before using the 1 x 1 TRUESIZE option, verify that your printer supports this option by printing and comparing measurements from the original and copied films.

DICOM print

Prints all or part of a study on a DICOM printer configured according to the instructions in "Adding or editing a source." When you click this command, the DICOM Print dialog box appears (see figure 3.45 below). Enter the following settings as needed and then click **OK**.

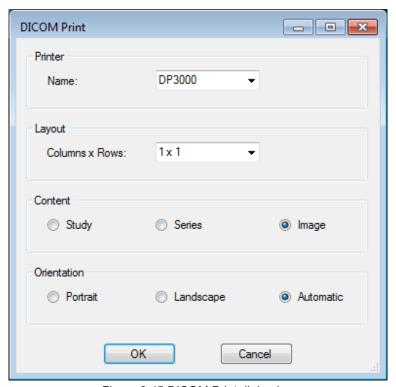


Figure 3.45 DICOM Print dialog box

Printer

Name

Select the name of the desired printer from the list.

Layout

Columns x Rows

Select from various preset print layouts of up to six columns by six rows of frames. If there are fewer images in the series than cells in the selected layout, the excess cells remain blank. If the image(s) belong to a CR, DX, or MG study, the 1 x 1 TRUESIZE layout becomes available.



Content

Study

Select to print all images in the current study.

Select to print all images in the current series.

Select to print only the current image.

Orientation

Portrait/Landscape

Select to print in portrait or landscape orientation. This setting overrides the portrait/ landscape setting in the Add/Edit DICOM Source dialog box.

Select to use the setting in the Add/Edit DICOM Source dialog box.



3.7 Working in the Exceptions and Inbox folders

The sources in the Source list (see figure 3.2) described up to now are sources from which you can actively retrieve studies onto the **GEAR**View **QC** server. By contrast, the Exception and Inbox folders are views of studies that have been "pushed" onto the **GEAR**View **QC** server either automatically or by external entities.

Opening a folder

To view the contents of a folder, simply click the *Source* list on the main screen and select either *Exceptions Folder* or *Inbox Folder*. Click **Search** to view all studies in the folder, or enter search criteria to narrow search results.

Exceptions folder

When you retrieve studies, **GEAR**View **QC** checks whether any of the incoming studies have been previously flagged as exceptions, typically due to having duplicate MRNs (or Patient IDs). If such studies are retrieved, they are placed in the **GEAR**View **QC** server and highlighted in red to indicate that they are exceptions. Additionally, they appear in the Exceptions folder, giving you a centralized screen from which to perform QC operations specifically on exceptions.

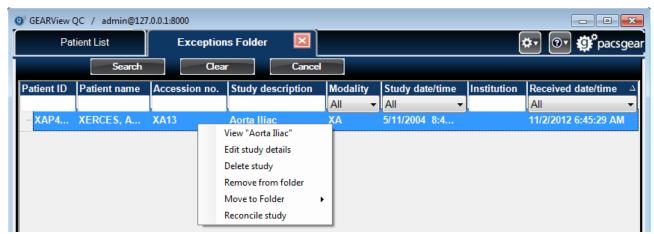


Figure 3.46 Exceptions folder

The following actions can be performed using the context menu in both the Inbox and Exceptions folders.

View [patient/study/series]

Same as View [patient/study/series] described earlier in this chapter.

Edit [patient/study/series] details

Same as Edit [patient/study/series] details described earlier in this chapter.

Delete [patient/study/series]

Deletes the item from the **GEAR**View **QC** server and the Inbox/Exceptions folder.

Remove from Folder

Removes the study from the Inbox/Exceptions folder, but does not remove it from the **GEAR**View **QC** server.

Move to Folder

Displays a submenu of folders to which you can move the patient, study, or series.



Reconcile [patient/study/series]

Displays a reconcile screen that contains similar fields as Reconcile [patient/study/series] described earlier in this chapter. Reconciliation of exceptions differs from normal reconciliation in that the studies that you reconcile against come only from the GEARView QC server rather than from a worklist. When reconciliation is complete, the item is removed from the folder but remains on the GEARView QC server.



Some PACS may require you to change all UIDs before sending studies back to their source of origin. Use the Edit study details command, then select the Create new image/series UIDs check box.

Inbox folder

The Inbox folder contains studies sent to it from modalities and other sources. For example, a physician might use PacsSCAN to import studies from an outside institution, then send those studies to the QC department for reconciliation with the new institution's EHR system. The study context menu in the Inbox folder contains the actions described above, but reconciliation is performed against a worklist just as when reconciling in the **GEAR**View **QC** server patient list tab.

When reconciliation is complete, the item is removed from the folder but remains on the GEARView QC server patient list tab unless the Inbox folder has been set up for Auto Send (see section 2.2), in which case the study is sent to the specified source.

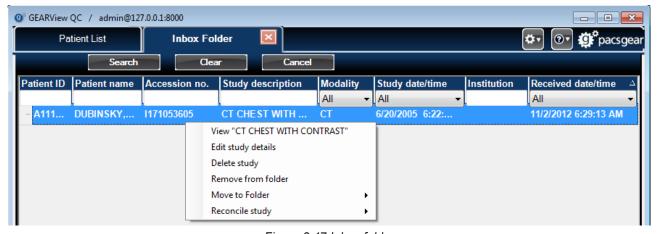


Figure 3.47 Inbox folder



4 Saving and Sending Studies

Once you have completed all editing and QC operations, save your changes on the **GEAR**View **QC** server, then send the studies to a PACS or other source, typically their source of origin.

4.1 Saving your changes

Some changes such as edits to demographics or moving and copying, are saved immediately by the program. However changes made directly to images themselves must be saved by the user according to the following procedure.

- 1. Right-click the thumbnail of the image or series you edited.
- 2. Click Save W/L (to save only Window/Level changes), or Save all image edits.

4.2 Sending studies (>)

It is important to remember that any changes you make to studies only affect data on **GEAR**View **QC**. To reflect your changes on PACS or another source, you must send the edited studies back to the source using the Send Study/Send all studies commands available in various context menus (see chapter 3).

4.3 Deleting the original studies

When sending your changed studies back to the source of origin, the original studies still remain (they are not overwritten by the changed ones). To avoid unintentional duplication, you must delete the original studies using the functions of the source device itself—**GEAR**View **QC** cannot delete studies from external sources.



Help Menu

Click the help button to display the help menu. The following two commands are available in the menu.





Figure 5.1 Help button...

...and help menu

User's Manual (PDF)

Displays the user's manual (this manual) in PDF format. Acrobat Reader 7.0 or later is required to view the manual.

About

Displays information about GEARView QC, and the license dialog box. In that dialog box, click Change to enter or edit the software license key and expiration date.



Figure 5.2 GEARView QC information and license dialog box



6 Appendix

6.1 Keyboard shortcuts

Window/level preset shortcuts

The following are example keyboard shortcuts for window/level presets. The actual presets configured differ by modality, and can be edited in the presets.xml file located in the installation directory.

F4 Abdomen
F5 Bone
F6 Brain
F7 Liver
F8 Lung
F9 Mediastinum
F10 Myelogram

Other shortcuts

Page Up/Down Scrolls up/down one screen in layout view Up/Down Scrolls up/down one image in layout view

Right/Left Jumps to the next/previous series in layout view

A Shows/hides overlays

B Switches to the measure Cobb angle tool
C Starts/pauses the selected cine loop

Inverts the current image (grayscale only)

M Switches to the measure line tool
N Switches to the measure point tool

O Measure ROI

P Switches to the pan tool

Q Reassign tool

R Resets the current image S Shows/hides scout lines

V Switches to the measure angle tool
W Switches to the window/level tool

Z Switches to the zoom tool

Home Jumps to first image of the selected series

End Jumps to last image of the selected series

Delete Deletes the highlighted measurement overlay



6.2 Audit entries

Patient level audit entries

Update Patient, change all Series and Image UIDs

Update Patient, change all child UIDs

Update Patient (for example, change Patient Name)

Copy Patient

Delete Patient

Create Patient

Merge Patient

View Patient

Study level audit entries

Update Study, change all child UIDs

Update Study (for example, change Study Description)

Move Study

Copy Study

Delete Study

Series level audit entries

Update Series, change all child UIDs

Update Series (for example, change Series Date/Time)

Move Series

Copy Series

Delete Series

Image level audit entries

Update Image

Copy Image

Delete Image

Image editing audit entries

Add Mask, Marker, Shutter



6.3 Anonymized fields

When anonymizing studies, the following DICOM fields are made blank or changed to random values:

DICOM TAG	NAME
(0008,0050)	Accession Number
(0800,8000)	Institution
(0008,0081)	Institution Address
(0008,0090)	Referring Physician
(0008,0092)	Referring Physician Address
(0008,0094)	Referring Physician Phone
(0008,0096)	Referring Physician ID Sequence
(0008,1010)	Station Name
(0010,1040)	Department
(0008,1048)	Physician of Record
(0008,1049)	Referring Physician Record ID Sequence
(0008,1050)	Performing Physician
(0010,1060)	Reading Physician
(0008,1070)	Operator
(0010,0010)	Patient Name
(0010,0030)	DOB (convert to YYYYMM01)
(0010,0032)	Birth Time (set to 12:00)
(0010,1000)	Other Patient IDs
(0010,1002)	Other Patient IDs Sequence
(0008,1005)	Patient's Birth Name
(0008,1040)	Patient's Address
(0008,1060)	Patient's Mother's Birth Name
(0008,4000)	Identifying Comments
(0010,1001)	Other Patient Names
(0010,1090)	Medical Record Locator
(0010,2180)	Occupation
(0010,21B0)	Additional Patient History
(0010,4000)	Patient Comments
(0010,2154)	Patient Phone Number
(0032,1031)	Requesting Physician ID Sequence
(0032,1032)	Requesting Physician
(0032,4000)	Study Comments



UID change rules

When editing, GEARView QC will apply these rules to determine changes to unique identifiers (UIDs). Based on customer feedback, PACSGEAR may change these rules in future releases.

- 1. When the MRN is edited to match an existing MRN, GEARView QC will NOT change any UIDs.
- 2. When merging two patients, GEARView QC will change the Patient UID to the new patient and not change any other UIDs.
- 3. When copying a patent, GEARView QC will create new patient, study, series, and image UIDs.
- 4. When moving or copying a study, GEARView QC will create new study, series and image UIDs.
- 5. When moving or copying a series, GEARView QC will create new series and image UIDs.
- 6. When splitting a series, GEARView QC will create new series and image UIDs for the new series.
- 7. When deleting an image, GEARView QC will NOT change UIDs.
- 8. When reconciling a patient from MWL, GEARView QC will update the Patient Name, MRN, DOB and Sex fields. No UIDs are changed.
- 9. When reconciling a study from MWL, GEARView QC will update available MWL fields, such as Study Description, Study Date/Time, Accession Number, and Referring Physician. The Study UID will be taken from MWL. GEARView QC will create new series and image UIDs.
- 10. When a study-level tag (for example, Study Description) is edited, GEARView QC will NOT change any UIDs.
- 11. When a series-level tag (for example, Series Description) is edited, GEARView QC will NOT change any
- 12. When one or more images are modified with a mask, shutter or marker, GEARView QC will create a new series UID for the series, and new UIDs for all images in the series.
- 13. When receiving an image with the same image, series and study UID, the original image will be retained and the new image will be silently ignored.
- 14. After receiving and changing a Patient Name with GEARView QC, subsequently retrieved studies with the same MRN will display the updated Patient Name. GEARView QC will display a warning message in the Job Queue indicating that one MRN is associated with two Patient Names. This workflow will be addressed in a future release.



6.5 Logged events

The following operations are recorded in the audit log.

- Update Patient Change All Series And Image UIDs
- Update Study Change All Child UIDs
- · Update Series Change All Child UIDs
- Update Series UID
- Update Patient Change All Child UIDs
- · Update Patient, Study, Series, or Image
- · Move Study, Series, or Image
- Copy Image, Study, Series, or Patient
- · Delete Series, Study, Image, or Patient
- Create Patient, or Study
- Merge Patient, Study or Series
- CMOVE
- CSTORE
- Viewed Series, Image Study, or Patient events for when users view patient data (User name, Patient ID, Patient Name, view date timestamp).



Support

At PACSGEAR, your success is our success. If you have any questions or problems, please do not hesitate to contact us.

Customer Support (Americas, Asia-Pacific):

+1 925 225 6100 (8:00 am to 5:00 pm Pacific Time).

support@pacsgear.com

Customer Support (Europe, Middle East, Africa):

+49 (0)89 450 807 600 (08:00 to 17:00 Central European Time).

support@pacsgear.com