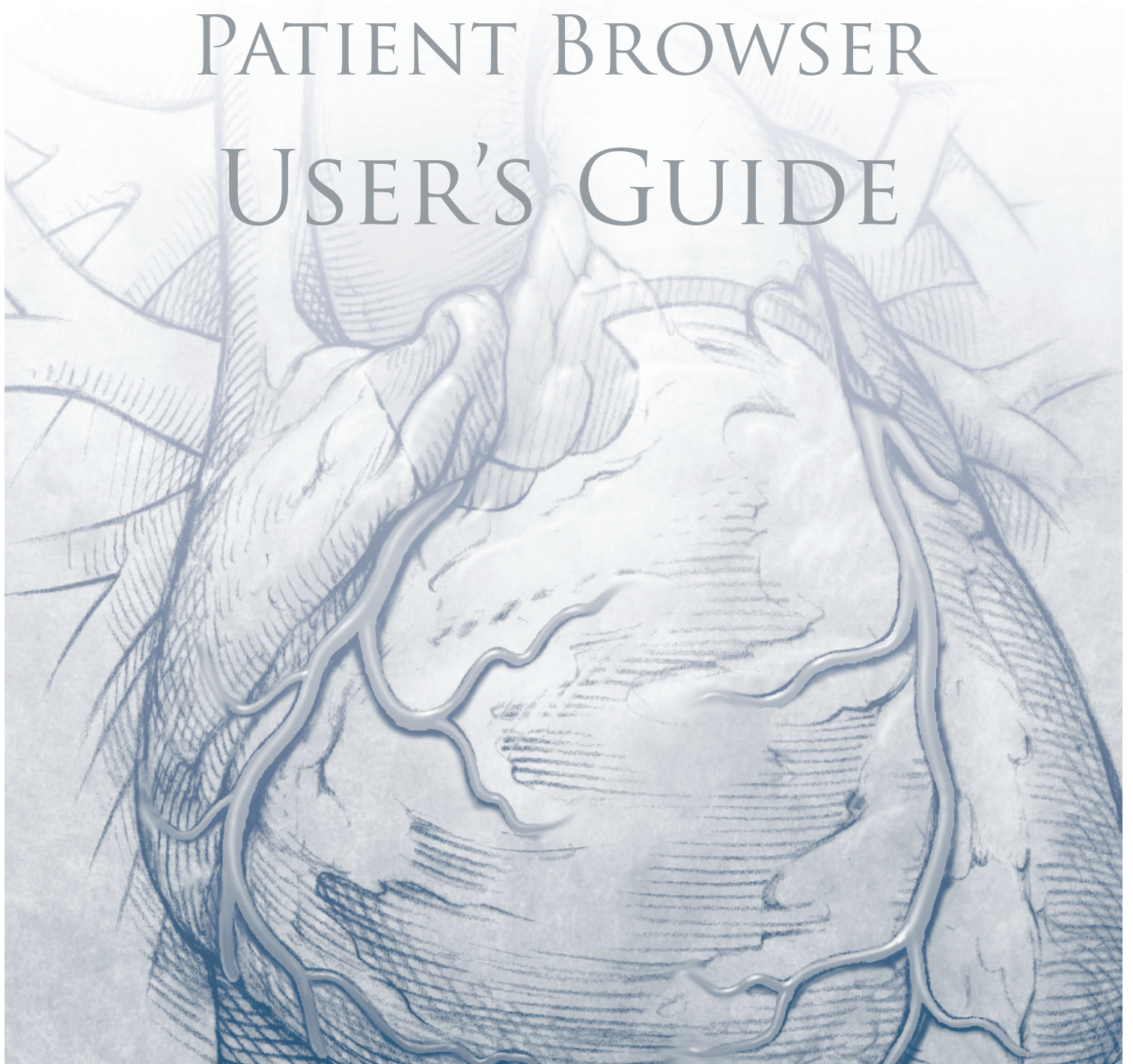




4DM PERSONAL'S PATIENT BROWSER USER'S GUIDE



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CHAPTER 1 GETTING STARTED

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Start or Edit a Report

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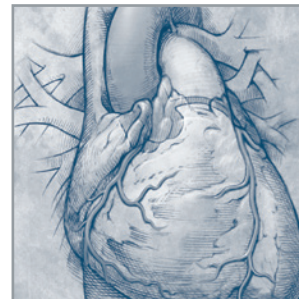
DICOM Configuration

[Chapter Six](#)

Data Management

Intended Use

4DM Personal's Patient Browser is the front-end to 4DM Personal, which is used to load patient data into 4DM, and it provides an intuitive file management interface for data access and management. Users can receive, export, and query/retrieve DICOM part 10 image files through DICOM connectivity to network connected workstations. The patient browser provides DICOM file import and export capability to local and network directories. The patient browser permits the user to filter, edit, and select the data to pass to an application (e.g. 4DM).



Description

4DM Personal's Patient Browser is a comprehensive data access, transfer and file management system for medical imaging data. Its simple and intuitive interface provides an environment where users can perform a variety of image file management operations such as store, import, receive, and transfer files between local, shared, and DICOM nodes and perform DICOM Query/Retrieve operations.

Finally, the patient browser provides a gateway to 4DM — an advanced visualization, quantification, and reporting software solution by selecting 4DM from the patient browser's application panel.

You can use the patient browser to do the following:

- Receive and store DICOM image files sent by remote DICOM nodes to a local or network connected database or directory.
- Receive Pegasys file formatted images stored to an SCP directory and convert them to an INVIA native DICOM image format.
- Receive ECAT file formatted images stored to an SCP directory and convert them to an INVIA native DICOM image format.
- Automatically import DICOM image files stored within a defined directory.
- Query/retrieve a list of DICOM image files from remote DICOM nodes to a local or network connected database, or a directory.
- Export DICOM image files to local or networked databases and/or directories.
- Export DICOM image files to a remote DICOM node supporting DICOM store.
- Export DICOM image files to external media (CD, DVD, and USB drive).
- Manage multiple databases and/or directories to organize patient data for review.
- Set a search filter for a database or directory to display data based on Patient, Study, and Series information in the DICOM file.
- Edit DICOM image files to correct user input errors.
- Start a new report when a patient image file does not yet exist
- Access 4DM Reporting to edit an existing report
- Merge two patients into one

User's Guide Conventions

Throughout this guide, INVIA will rely on consistent use of terminology and symbols to best communicate with you, the end user. Below is a summary of these conventions:

- Blue, underlined text represents [links](#) to help you quickly navigate within this document or launch online content (Internet access required).
- Helpful hints, warnings, and additional information, which appear in the left margin for quick and easy reference, are identified by various symbols:



Note



Warning



Tip



Right Click
Option

Common Abbreviations

The user's manual and user interface will rely on the following abbreviations:

Abbreviation	Description
AE Title	Application Entity Title identifies the DICOM nodes communicating between each other.
DICOM	Digital Imaging and Communications in Medicine (DICOM) is a standard for handling, storing, printing, and transmitting information in medical imaging.
IP	Internet Protocol is a unique identification number, such as 127.0.0.1, for devices (computers, printers) within a network.
SCP	Service Class Provider
SCU	Service Class User

System Requirements

Supported Operating Systems:	Windows® 7 (64-bit) Windows® 8 (64-bit) Windows® 10 (64-bit) Windows® Server 2008 R2 Windows® Server 2012 R2 Windows® Server 2016
Processor Speed:	2.0 GHz or greater
Memory:	3 GB recommended
Disk Space:	1 GB required for installation; 2-4 GB additional disk space for image files
Display:	1280x1024 or higher recommended 24 bit color
3D Graphics Card:	256 MB or higher recommended 3D graphic card supporting OpenGL 3.0 is recommended
Networking:	Networking adapter card (ethernet or wifi) required



More detailed instructions for product installation can be found on the Training and Support pages at www.inviasolutions.com

Accessing 4DM Personal's Patient Browser

1. Close any previous versions of the patient browser and 4DM that are open.
2. Insert 4DM Installation media into the computer or server
3. If the media does not autorun, open **Install_4DM**.
4. Click on **Install 4DM**
5. Follow the on-screen installation instructions.
6. To launch the patient browser, select Corridor4DM from the INVIA tab in your program list in the Start Menu.

The **Licensing** window can also be accessed from the **Windows Start Menu**. Select **INVIA** and then **INVIA Licensing**.

Licensing

In order to run 4DM Personal, you must have a valid license key. The application supports both fixed and floating licenses. To open the **Licensing** window, open the patient browser and select **Licensing** from the **Help** menu. Users have the option to select the site-specific license model type. The fields within the **Licensing** window will change based upon selection.

Fixed License Model (Figure 1.1)

- 1 **Hardware ID:** This is a unique identifier specific to the workstation to which 4DM is licensed.
- 2 **File Location:** When licensing a fixed installation, the user can navigate to the directory folder where the 4DM fixed license key file is located. Once **Check Status** is selected, 4DM will automatically copy the license file to the 4DM application directory and display the file path.
- 3 **Status:** Displays any messages regarding the validation of the license key file.
- 4 **Available Features:** Lists the features defined by the license key.

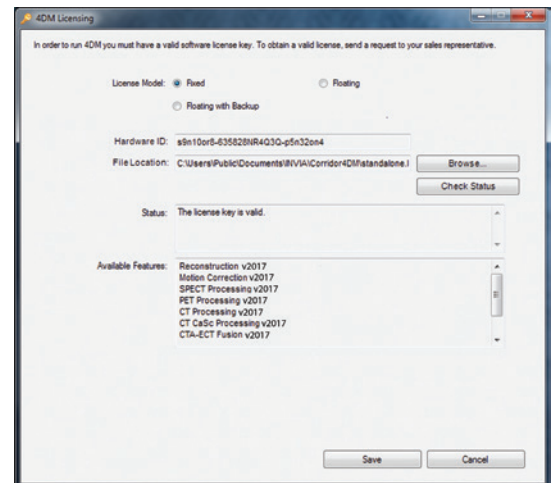


Figure 1.1: The Licensing window - Fixed License

Floating License Model (Figure 1.2)

- 1 **IP Address and Port:** User enters the IP Address and Port number for the license manager. Select **Check Status** to verify connection to the license manager.
- 2 **Server Information:** Displays the active license manager address, total number of licenses on the license manager, and the number of licenses in use. The **Details** button provides more information about the license manager.

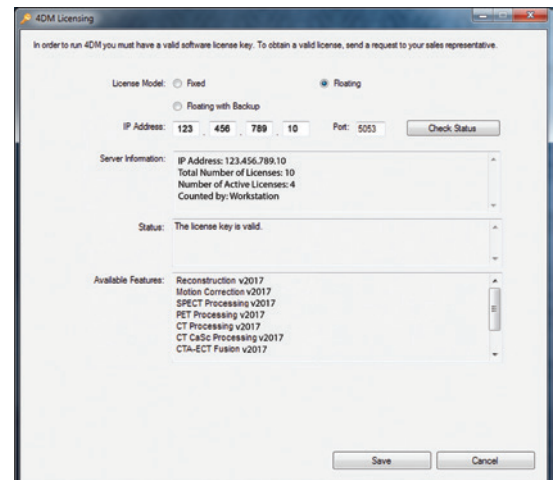


Figure 1.2: The Licensing window - Floating License

Left-click **About** from the Help menu to review the patient browser's product information, a summary of licensing information, and to access this User's Guide.

- 3 **Status:** Displays any messages regarding the validation of the license key file.
- 4 **Available Features:** Lists the features defined by the license key.

Floating License with Backup Model (Figure 1.3)

- 1 **Primary Server IP Address and Port:** User enters the IP Address and Port number for the license manager. Select **Check Status** to verify connection to the license manager.
- 2 **Backup Server IP Address and Port:** User enters the IP Address and Port number for the license manager that is designated as the backup server. Select **Check Status** to verify connection to the backup license manager.
- 3 **Status:** Displays any messages regarding the validation of the license key file.
- 4 **Available Features:** Lists the features defined by the license key.

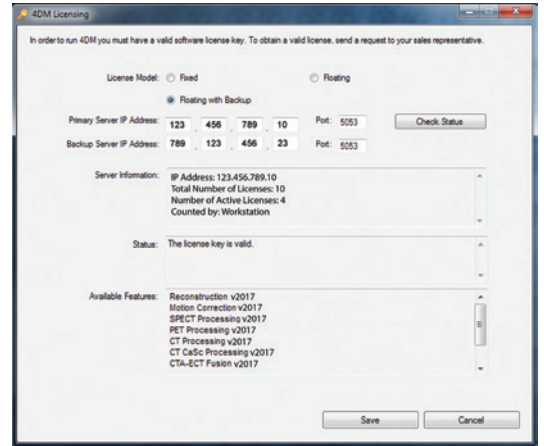


Figure 1.3: The Licensing window - Floating License with Backup



For help retrieving files from remote DICOM nodes, go to [Chapter 5: DICOM Configuration](#).

This chapter guides users through the basic features and functionality of 4DM Personal’s Patient Browser while accessing patient files from local and shared directories.

Screen Overview

First, the user should become familiar with the application’s user interface (*Figure 2.1*). The menu bar at the top of the interface includes the **File**, **Tools**, and **Help** menus. The interface is designed to flow from left-to-right, with three areas: **Sources**, **Search/Patient List**, and **Applications/Destinations**.

- **Sources** – The left side of the patient browser interface provides a list of data sources. Navigate local or shared directories within the **Local** tab and DICOM-connected workstations within the **Remote** tab to access patient datasets. Add local and DICOM folders and databases to the Sources panel for easy access.
- **Search/Patient List** – The center area of the patient browser interface allows users to filter imaging data by applying search parameters or by prioritizing according to file characteristics. Select one or multiple items from the patient list for review or transfer.
- **Applications/Destinations** – The right side of the patient browser interface applies actions to patient files. Launch a patient file in 4DM for review, start or edit reports, merge patient files, or copy files to local or remote destinations.

Sources

Search / Patient List

*Applications/
Destinations*

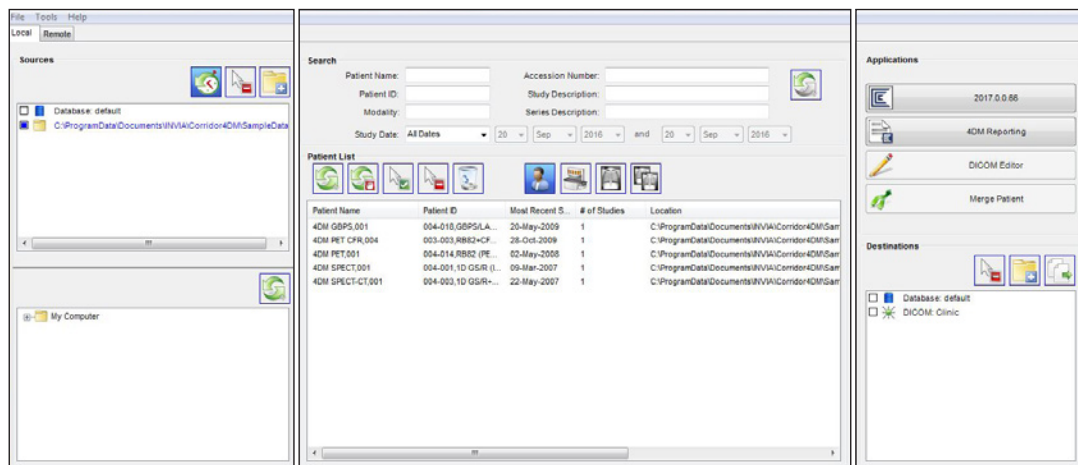


Figure 2.1: The patient browser screen contains File, Tools, and Help menus, and three areas for user interactions: Sources, Search / Patient List, and Applications / Destinations

Menu Bar

The top menu bar contains **File**, **Tools** and **Help**

File (*Figure 2.2*)

- **Exit:** Exits the patient browser

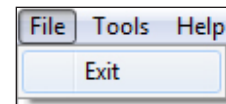


Figure 2.2: File Menu

Tools (Figure 2.3)

- **Database Manager:** Described in [Chapter 4](#)
- **Local SCP Configuration:** Described in [Chapter 5](#)
- **DICOM Node Configuration:** Described in [Chapter 5](#)
- **Job Queue Manager:** Described in [Chapter 2](#)
- **Preferences:** Described in [Chapter 6](#)
- **Auto Import:** Described in [Chapter 5](#)

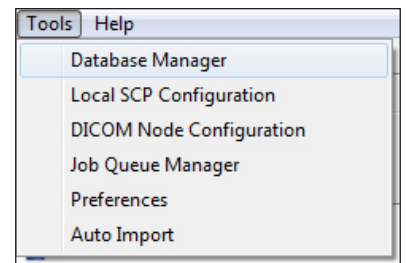


Figure 2.3: Tools Menu

Help options (Figure 2.4)

- **About:** Provides patient browser product information, Language Setting, License Information, Feature List and User Guide button
- **Licensing:** Described in [Chapter 1](#)
- **Event Viewer:** Described in [Chapter 5](#)
- **4DM Personal's Patient Browser Log Viewer:** Described in [Chapter 5](#)

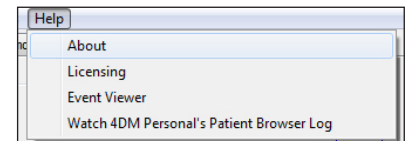


Figure 2.4: Tools Menu

Sources

The installation process creates a default database on your local drive and loads sample files to a folder on your system. These two locations appear as shortcuts in the top left panel of the application (Figure 2.5). To browse for local folders with stored DICOM files, simply navigate to the desired location using the folder structure directory in the bottom panel of the Local Sources tab (Figure 2.6).

You can load studies from multiple sources at the same time. The patient browser will load studies from each source that is selected.

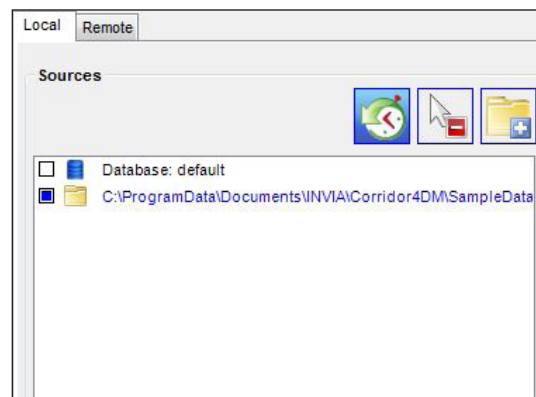


Figure 2.5: This area displays shortcuts to local folders.

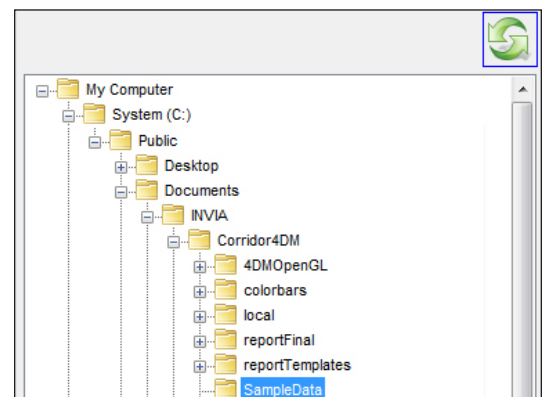


Figure 2.6: An example of the folder directory panel.

To Select Local Data Sources

- Click on the desired database or directory so it is selected (Figure 2.7). Click the **Refresh** tool (Figure 2.8) in the **Patient List Panel** to display a list of patient files.



Figure 2.7: Selected Local Source



Figure 2.8: Patient List Panel



Save time when loading studies — put your most frequently used databases and folders in the Sources menu.

- Local Refresh is done automatically for patient datasets at each level: patient, study, and series. The patient browser also auto-refreshes the sources for patient datasets in local mode on start-up, on new source selection, when importing, copying, deleting and auto-importing 4DM result files into database.

To Create a New Source Directory

- Click the **Add Local** tool (Figure 2.9). Select the desired directory and click **OK**. The new Directory will appear in the top **Local Sources** panel.



Figure 2.9: Add Local tool in Local Sources Panel

To Navigate to a Local Directory (local or mapped drives)

- Navigate to the directory and folder of your choice. Click on the desired destination so it is highlighted blue. Click the **Refresh** tool in the **Patient List Panel** to display a list of patient files.

Search/Patient List

The center of the patient browser interface provides the Search panel and Patient List panel.

Search Panel

The Search panel (Figure 2.10) can be used to search a large database for patient studies. The search criteria can be set by **Patient Name**, **Patient ID**, **Modality**, **Study Date**, **Study Description** or **Series Description**.

Enter the search qualifiers into the various text fields and then click the **Refresh** tool in the Patient List panel. For examples, see the Tip in the left-column.

Figure 2.10: The Search panel in its default state

The only field that is not text based is the **Study Date**. This field uses a drop-down menu to set the parameters for the search and a pop-up calendar for date selection (Figure 2.11):

- All Dates:** Query does not restrict returned files according to dates.
- On:** Query will return only studies performed on the specified date.
- Before:** Query will return only studies performed before the specified date.
- After:** Query will return only studies performed after the specified date.
- Between:** Query will return only studies performed between the two specified dates.
- Today:** Query will return only studies performed that day.

name	Most Recent S...	# of Studies	Location
22-May-2007	1		C:\ProgramData\Documents\INVIA\Corr
09-Mar-2007	1		C:\ProgramData\Documents\INVIA\Corr

Figure 2.11: The Study Date area includes a drop-down menu of the various parameters for a Study Date search and drop-down menus for day, month, and year.



Search parameters are not case sensitive. A search for **ABC** will return the same results as **Abc** or **abc**.

Search Parameters and use of the Wildcard (*):

- abc** – Returns items that exactly match “abc”
- abc*** - Returns all items that match the characters before the asterisk (*); all other characters are ignored (e.g., abc, abcd, abcde, etc).
- *abc** – Returns all items that match the characters after the asterisk (*); all other characters are ignored (e.g., mabc, nabc, oabc, etc).
- *abc*** – Returns all items that match the substring “abc” (e.g., abcd, dabc, fabcg, etc.)



- **Yesterday:** Query will return only studies performed on the previous day.
- **Last 2 Days:** Query will return all studies performed within the past two days.
- **Last 7 Days:** Query will return all studies performed within the past seven days.

Click the **Reset** tool (Figure 2.12) to clear all fields.



Figure 2.12:
Reset tool

Patient List Panel

The Patient List panel displays available files from the selected source(s) or source location(s) (Figure 2.13).

▲ Patient Name	Patient ID	Most Recent S...	# of Studies	Location
4DM GBPS,001	004-018,GBPS/LAO (MUGA2)	20-May-2009	1	C:\Users\Public\Documents\INVIA\Corridor4DM\SampleData\...
4DM PET CFR,004	003-003,RB82+CFR (CFR4)	28-Oct-2009	1	C:\Users\Public\Documents\INVIA\Corridor4DM\SampleData\...
4DM PET,001	004-014,RB82 (PET Abnormal)	02-May-2008	1	C:\Users\Public\Documents\INVIA\Corridor4DM\SampleData\...
4DM SPECT,001	004-001,1D GS/R (Ischemic2)	09-Mar-2007	1	C:\Users\Public\Documents\INVIA\Corridor4DM\SampleData\...
4DM SPECT-CT,001	004-003,1D GS/R+CaSc (CaSc)	22-May-2007	1	C:\Users\Public\Documents\INVIA\Corridor4DM\SampleData\...

Figure 2.13: Patient List

This area contains five User Control tools (Figure 2.14) and four File View tools (Figure 2.15):

- **Refresh (Double Arrows):** Populates or updates the list with files from the selected source as filtered according to the search parameters.
- **Stop Refresh (Double Arrows with Hand):** Cancels the patient list update action initiated by the Refresh button.
- **Select All (Cursor Arrow with a Check Mark):** Selects all of the displayed patient files within the patient list.
- **Unselect All (Cursor Arrow with a Minus Sign):** Deselects all of the displayed patient files within the patient list.
- **Delete Selected Dataset(s) (Trash Can):** Deletes the selected file(s) from the patient list and the source directory.
- **Patient (Person):** Displays Patient Name, Patient ID, Most Recent Study Date, Number of Studies, and Location within the display list.
- **Study (Scanner):** Displays Patient Name, Patient ID, Study Date, Study Description, Modalities, Number of Series, and Location within the display list.
- **Series (Single X-Ray):** Displays Patient Name, Patient ID, Modality, Series Date, Series Description, Number of Images, and Location within the display list.
- **Instance (Two X-Rays):** Displays Patient Name, Patient ID, Modality, Instance Date, Instance Description, and Location (only available within local mode).



Figure 2.14: User Control tools



Figure 2.15: File View tools

By clicking on the column header in the Patient List panel, the list will sort according to that field. The sort order is designated with a small black triangle. A single click will organize the information in ascending order, and a second click will reverse the order. The columns can be resized by clicking-and-dragging on the column border.

The patient browser will conduct the following date-based searches according to your computer's date setting:

- Today
- Yesterday
- Last 2 Days
- Last 7 Days

The end user has the ability to copy/paste the patient list into other applications such as MSWord, Notepad, Excel and other documents that support copy/paste of text.

By default, the file list will be organized by the Patient Name column, starting with numerical file names and then alphabetic file names.

When a patient or multiple patients are selected, the **Study**, **Series**, and **Instance Views** will apply only to those selected patients. Return to the **Patient View** to see all available patients.



Applications Panel

The functionality to apply an action to patient files is located in patient browser's right panel. This panel is divided into two areas: the top half is the Applications panel providing button controls for launching additional applications; the bottom half is the Destinations panel providing file transfer capabilities.

4DM

To open desired files in **4DM** for study review, the user simply needs to select the specific files and then click the **4DM** button in the **Applications** panel (see ❶ *Figure 2.16*). If the user selects a patient that does not contain patient images, clicking the 4DM button will open 4DM Reporting.

The user can edit the command line to select a specific user workflow to always launch when the 4DM application button is selected, e.g. -user DrSPECTReview. Right-click on the 4DM application button to launch the editor (*Figure 2.17*). This command will launch 4DM with the user configured workflow until it is deleted from the **Edit Command Line Arguments** field.

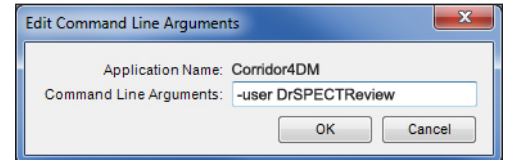


Figure 2.17: Right-click to access the Command Line Window

4DM Reporting

For users who do not need to access 4DM, but simply need to create or edit a report, use the **4DM Reporting** button (see ❷ *Figure 2.16*). Refer to [Chapter 3](#) to learn more about the various use-cases of accessing **4DM Reporting** from the patient browser.

Select multiple files at once to save time. Hold the shift key while selecting the first and last in consecutive list. Hold the control key [Ctrl] while selecting multiple inconsecutive items.

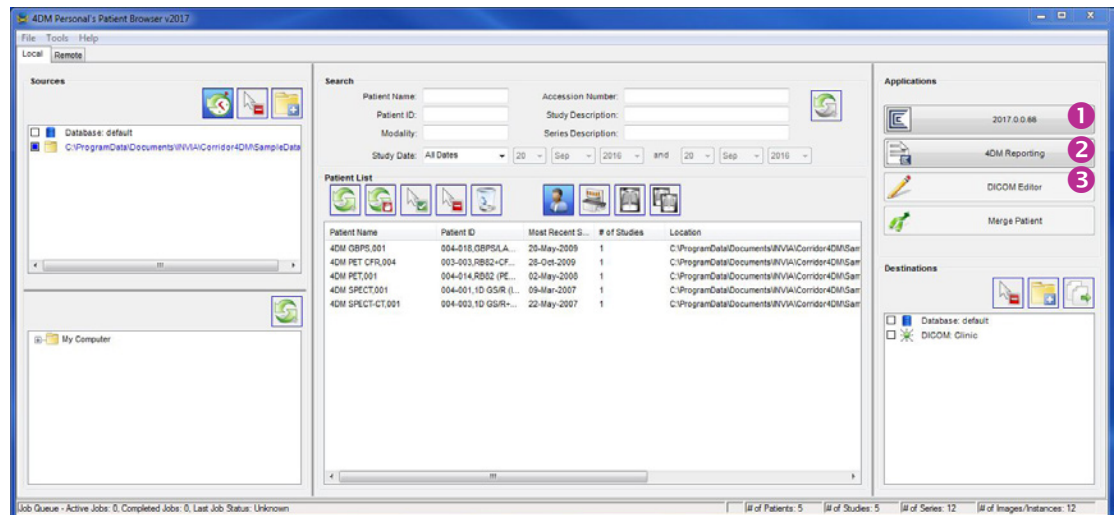


Figure 2.16: Select files to open in the browser window

WARNING

Changing Patient Name, Patient ID, Birth Date, and Gender can affect diagnostic results.

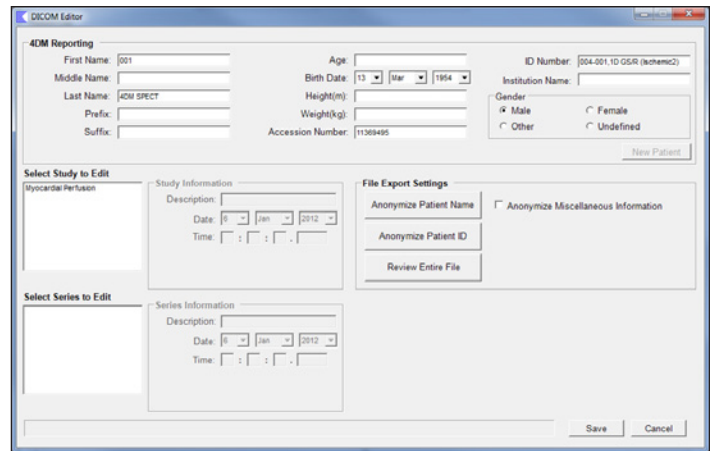
DICOM Editor

The DICOM Editor is accessed through the Application Panel (see ❸ *Figure 2.16*). The DICOM Editor (*Figure 2.18*) can be used to view patient DICOM information, anonymize patient data, review entire DICOM attributes and edit DICOM attributes in the selected file.

To load a patient into the editor, select it from the Patient List and click the DICOM Editor button from the **Applications** panel.

To Anonymize a Patient Name:

- Select **Anonymize Patient Name** (Figure 2.19)
 - When the button is activated it will clear the First Name, Middle Name, Last Name, Prefix and Suffix fields. The Last Name field will display ANON followed by the first three characters of last name and the first character of first name. (i.e., John Doe becomes ANONDOEJ)

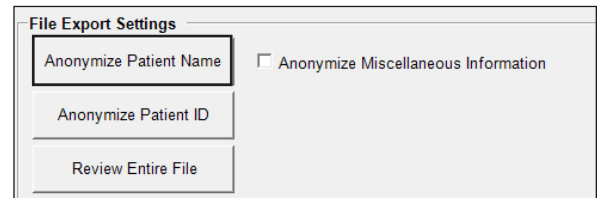


The screenshot shows the DICOM Editor interface. At the top, there are fields for patient information: First Name (001), Middle Name, Last Name (ADM SPECT), Prefix, Suffix, Age, Birth Date (13 Mar 1994), Height(m), Weight(kg), Accession Number (1130495), ID Number (004-001.1D.G5.R (scheme2)), and Institution Name. There are radio buttons for Gender (Male, Female, Other, Undefined) and a 'New Patient' button. Below this, there are sections for 'Select Study to Edit' and 'Select Series to Edit', each with a 'Description' field and a 'Date' field. On the right, there is a 'File Export Settings' panel with buttons for 'Anonymize Patient Name', 'Anonymize Patient ID', and 'Review Entire File', and a checkbox for 'Anonymize Miscellaneous Information'. At the bottom right are 'Save' and 'Cancel' buttons.

Figure 2.18: DICOM Editor

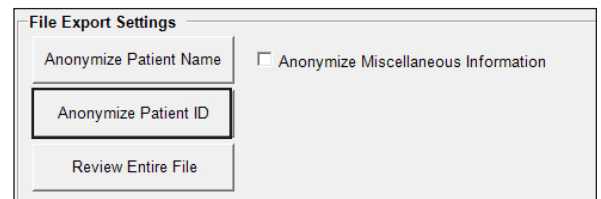
To Anonymize a Patient ID:

- Select **Anonymize Patient ID** (Figure 2.20)
 - When the button is activated it will clear the ID Number field and then display ANON followed by first four digits of ID Number followed by date and time on system at time of edit. (i.e., ID NUMBER is 12345678 edit occurred on 9/8/2009 at 12:12:12pm, becomes ANON123420090809121212)



This close-up shows the 'File Export Settings' panel. The 'Anonymize Patient Name' button is highlighted with a black box. Other buttons include 'Anonymize Patient ID' and 'Review Entire File'. A checkbox for 'Anonymize Miscellaneous Information' is also visible.

Figure 2.19: DICOM Editor - Anonymize Patient Name

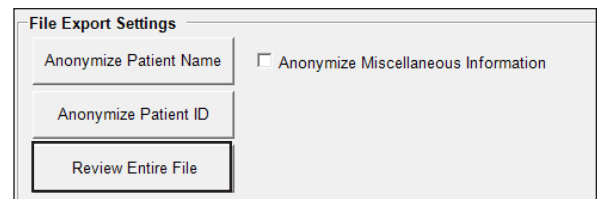


This close-up shows the 'File Export Settings' panel. The 'Anonymize Patient ID' button is highlighted with a black box. Other buttons include 'Anonymize Patient Name' and 'Review Entire File'. A checkbox for 'Anonymize Miscellaneous Information' is also visible.

Figure 2.20: DICOM Editor - Anonymize Patient ID

To Review DICOM file:

- Select **Review Entire File** (Figure 2.21)
- A text file will open in Notepad listing the DICOM attributes for the selected dataset
- Displayed fields are not editable



This close-up shows the 'File Export Settings' panel. The 'Review Entire File' button is highlighted with a black box. Other buttons include 'Anonymize Patient Name' and 'Anonymize Patient ID'. A checkbox for 'Anonymize Miscellaneous Information' is also visible.

Figure 2.21: DICOM Editor - Review Entire File

To Edit DICOM information in a selected file:

- Choose a field you want to edit
 - Editable fields are indicated by a text box and allows free text editing
- Click **Save** to overwrite the original file passed to the editor or **Cancel** to exit without edits

The check box for **Anonymize Miscellaneous Information** is deselected by default. If selected, it will anonymize multiple miscellaneous DICOM fields including: Institution Name, Institution Address, Referring Physician Name, Patient Insurance Code, and more.





If the patient is located in a **Database** the **Overwrite** option is disabled.

To Generate New Patient from a selected file:

- Edit the Patient Name or Patient ID
 - The **New Patient** button is now available
- Click **New Patient** to generate the newly defined patient with a copy of all other DICOM fields loaded into the editor

Merge Patient

Merging a patient consolidates two patient records into one, in the event that a duplicate has been created in error.

Two example use cases of the Merge Patient functionality in the patient browser are:

1. If a user created a preliminary report within 4DM Reporting for “Jon Smith” (incorrect spelling) and then later imported a patient named “John Smith” (correct spelling) from the worklist and acquired patient images.
 - Two patients would be created since the names do not match.
 - Merging Jon Smith’s preliminary report into John Smith’s image data would create a single patient that contains both the patient information as well as the patient images.
2. If patient images were acquired under the wrong patient entirely – e.g., the user selected “Jane Smith” from the worklist and acquired patient images, when the user should have selected “John Smith.”
 - Two patients would be created since the names do not match.
 - Merging Jane Smith’s patient images into John Smith’s patient file would reassign the images to the correct patient.

To combine two patients into one, select both patients from the patient list, and click **Merge Patient** (Figure 2.22). In the *Merge Patient* window, select the **Up** arrow to merge Patient 2 into Patient 1, or select the **Down** arrow to merge Patient 1 into Patient 2.

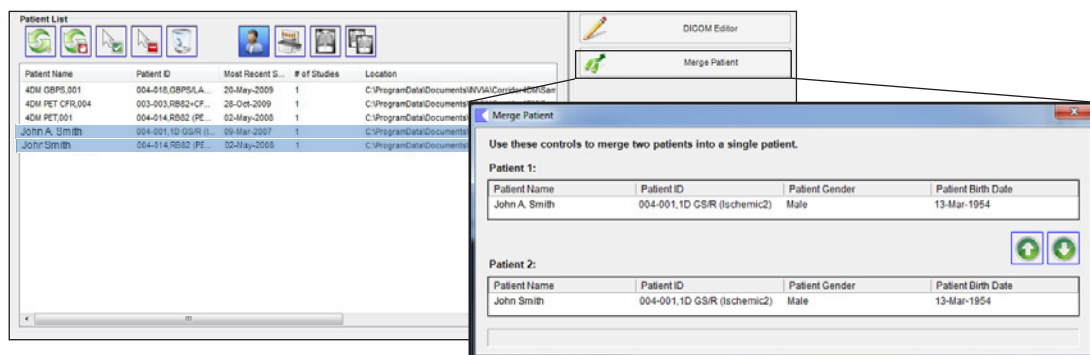


Figure 2.22: Merge Patient tool

During the merge, any **DICOM datasets** from the other patient is added to that master patient. Note that DICOM datasets are always *added* to the master patient, never overwritten.

The patient the user merges into will dictate the **Patient Name**, **Patient ID**, **Gender**, and **Date of Birth** that the patient retains. All other demographics and medical history information that are retained will be taken from the more recently saved patient information.

A pop-up window allows the user to delete or keep the secondary patient. Note that, during the merge, the user will not have the option to select which fields to keep or overwrite.

Destinations Panel (Figure 2.23)

To copy patients to a database:

- Select specific patient files
- Select the target database
- Click the **Copy To** tool (Figure 2.24)

To copy patients to a DICOM node:

- Select specific patient files
- Select the target DICOM node
- Click once on **Copy To** tool

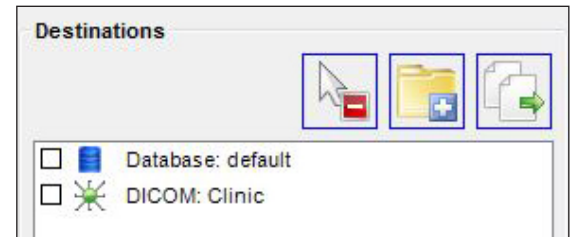


Figure 2.23: Destination Panel

To copy patients to a New Directory:

- First, create a new directory
 - Click the **Add Local** (Figure 2.25) button
 - Select the desired directory
 - Select **OK**
- The new directory path will appear in the Destinations panel
 - Select specific patient files
 - Select the target directory
- Click once on **Copy To** tool



Figure 2.24: Copy To tool



Figure 2.25: Add Local tool

Status Bar

The patient browser interface provides a Status Bar along the bottom of the patient browser screen. There are five display panels on the **Status Bar** (Figure 2.26):

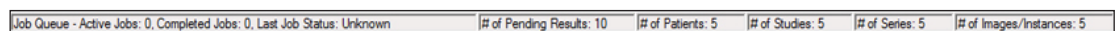


Figure 2.26: Status Bar

- **Job Queue:** The number of Active Jobs and Completed Jobs will be displayed in addition to Last Job Status. If an error occurs, the Failed status window will be displayed and provide the reason of failure.
 - Left-click on the Job Queue to view the Job Queue Manager.
- **Job Queue Manager:** Displays Status, Timestamp, Type and Details for both Active Jobs and Completed Jobs.
 - **Active Jobs:** The user can **View Job Details**, **Move Job Up**, **Move Job Down**, **Cancel Job** and **Pause/Resume Job** in the Job Queue Manager.



Right-click on the status bar to display the last 100 actions in a window.

- **Completed Jobs:** The user can **View Job Details** and **Delete/Clear All** jobs in the Job Queue Manager.
- **Action Status:** Displays Copying actions.
- **Number of Pending Results:** Denotes the number of DICOM result files from Corridor4DM pending import into a database.
- **Number of Patients:** The number displayed depends on the Patient Display List
 - Displays the total number of selected patient files.
- **Number of Studies:** The number displayed depends on the Patient Display List
 - Displays the total number of selected study files
- **Number of Series:** The number displayed depends on the Patient Display List
 - Displays the total number of selected series files
- **Number of Instances:** The number displayed depends on the Patient Display List
 - Displays the total number of selected instance files. (Only available on the Local tab. On the Remote Tab, the display panel is always blank.)

CHAPTER 3 START OR EDIT A REPORT

To enter patient information into a report prior to obtaining the patient study, start the report from the patient browser.

Start a Report

To start a report in 4DM Personal, do not select any patients within the Patient List, and click **4DM Reporting** (Figure 3.1). 4DM's integrated reporting interface opens in a new window as a blank slate to begin entering patient information such as Demographics or Medical History.

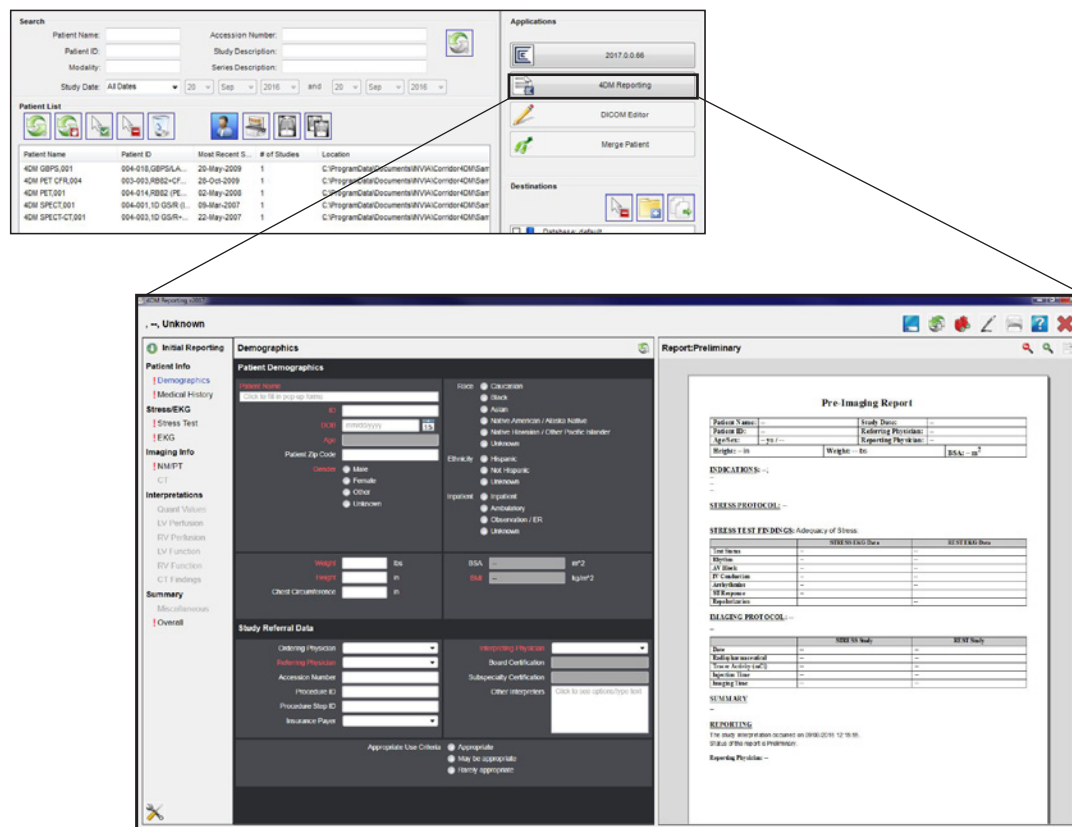


Figure 3.1: Start a Report from 4DM Personal's Patient Browser

To learn more about 4DM Reporting, refer to the *4DM Reporting User's Guide*, accessible from the Help Menu in 4DM Reporting (Figure 3.2).



Figure 3.2: Help button in 4DM Reporting

Edit an Existing Report

Locate and select the patient from the Patient List and click the **4DM Reporting** button in the Application Panel (Figure 3.3). 4DM's integrated reporting interface opens in a new window with any previously saved patient information and imaging information displayed.

Note that depending on the template you have selected, some reporting screens may not be accessible. To change the reporting template, simply click the **Template Selector** (see ❶ Figure 3.3) and choose a different template. *For more information on templates, refer to the 4DM Reporting User's Guide.*

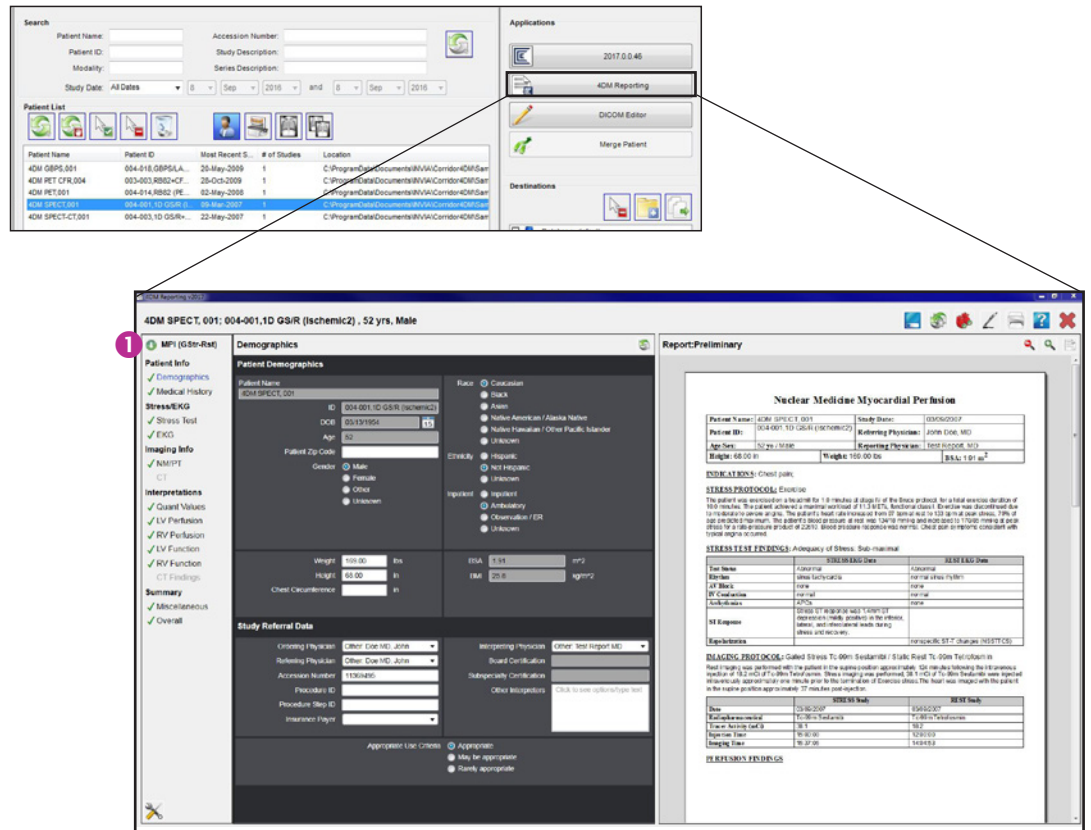


Figure 3.3: Edit an Existing Report from 4DM Personal's Patient Browser

CHAPTER 4 DATABASE MANAGEMENT

Database Manager

The **Database Manager** window (Figure 4.1) is accessible from the **Tools** menu and permits the user to add and delete databases as well as manage database files.

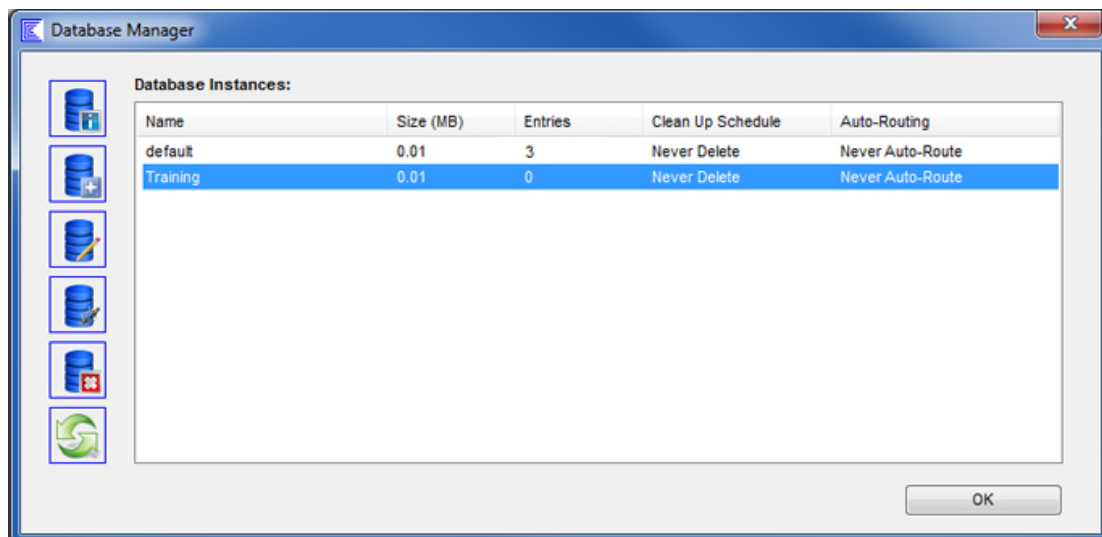


Figure 4.1: Creating a new data storage location using the Database Manager

Databases have an advantage over folders when it comes to patient file storage. Queries return search results in less time. Also, users can efficiently add and delete files.

These are the Database Manager tools:

- **Database Information:** (Figure 4.2) Provides details about the selected database (Database ID, Database Filename, Database Location and Type (local or network)). Left-click to access the following database tools (Figure 4.3):



Figure 4.2: Database Information Tool

- 1 **Test Database Connectivity:** Tests the connectivity between the patient browser and the selected database. This is useful for troubleshooting issues with networked databases.
- 2 **Database Cleanup Schedule:** This tool provides a window where the user can define an automatic cleanup schedule to reduce the size of an image database. Within this window, the user can define the time the scheduled cleanup will occur and the criteria for what files are to be deleted when threshold limits are reached.
- 3 **Rebuild Database Index:** Reconciles the number of database entries with the number of files.
- 4 **Compact Databases:** Reclaims wasted space within the databases and improves performance.
- 5 **Database Auto-Routing Schedule:** This tool provides a window where the user can specify a DICOM destination where images will be automatically transferred. This is primarily used for pushing results to a PACS system. For each database, the user can specify one or more destination DICOM nodes (Auto-Routing Nodes), a start date after which all image files will automatically transfer to the destination(s), and the schedule time when the automatic transfer will occur.



Figure 4.3: Database Information Window Tools

If All Studies Older Than a certain number of days is selected, comparison studies that are older than the defined day range in the database will be deleted during the Database Cleanup Time.

Want to collect interesting cases in a single database? Create a custom database and copy patient files using the patient browser file transfer functionality.



- **Add/Link Database:** (Figure 4.4) Creates or links a database and adds it to the Sources and Destination panels.
- **Rename Database:** (Figure 4.5) Edit the selected database name.
- **Unlink Database:** (Figure 4.6) Unlink the selected database from the system and remove it from the lists in the **Sources** panel and **Destinations** panel without deleting all related data from the system.
- **Delete Database:** (Figure 4.7) Deletes the database from the database list in the **Sources** panel, **Destinations** panel, and all related data from the system. This operation cannot be reversed.
- **Refresh:** (Figure 4.8) Updates the current list of the database tables.



Figure 4.4: Add/Link Database Tool



Figure 4.5: Rename Database Tool



Figure 4.6: Unlink Database Tool



Figure 4.7: Delete Database Tool



Figure 4.8: Refresh Tool

Creating a Local Database for Image Storage

Users can build multiple databases to catalog patient data for specific uses. As an example, this guide will illustrate creating a Training database.

1. Open the Database Manager window from the Tools menu
2. Select **Add/Link Database** tool
3. Create a new **File name** (see 1 *Figure 4.9*)
4. Files type will remain INVIA Database (*.icbd)
5. Select **Open** to complete the task
6. The new database name will appear automatically in the Database Manager

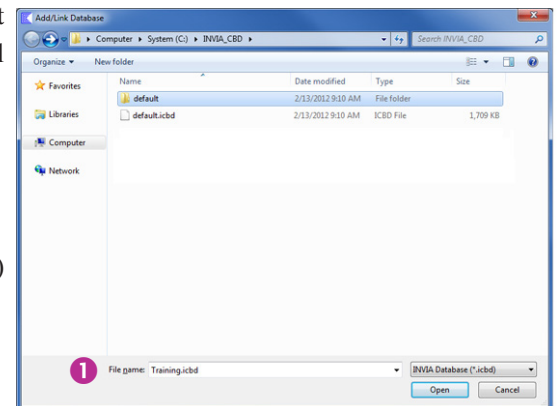


Figure 4.9: Creating a new database in the patient browser

Creating a Network Database for Image Storage

Prior to creating a network database, you will need to insure that the directory on the remote computer is shared to the network. You also need to insure that the security settings for this directory allows for remote users to read and write files to this directory. Once sharing and security are defined on the remote computer:

1. Open the Database Manager window from the Tools menu
2. Select **Add/Link Database**
3. Navigate to the shared directory
4. Create a new **File name** (e.g. Training)
5. Files type will remain INVIA Database (*.icbd)
6. Select **Open** to complete the task
7. The new database name will appear automatically in the Database Manager

SCP vs. SCU

These two terms are important for understanding the communication capabilities of DICOM compliant workstations.

A Service Class User (SCU) is a device that requests a DICOM Service, typically a client requesting information or data from an SCP.

A Service Class Provider (SCP) is the device that provides the service to an SCU, e.g. image storage, image query with image storage.

The patient browser provides connectivity for both of these services. Databases or folders saved in the Sources panel act as SCUs while databases or folders saved in the Destinations panel act as SCPs.

The **Station Name** will identify the Corridor Browser-based SCP within the network. This SCP will initially listen on all available IP addresses. If no IP address is available, **None** will appear as the IP address and the SCP service will remain off until an IP address is available or defined.

When defining a port, users should confirm that the port is not used by another network service. Consult your IT manager for assistance.

Upon installation, 4DM Personal will configure a base Service Class Provider (SCP) using the following parameters:

1. **Station Name** (by default, this will be the computer's name)
2. **Application Entity (AE) Title** (same as Station Name by default)
3. **Port #** (automatically generated with first available port starting with Port 104)
4. **IP address** or addresses
5. **Data Storage** ("Database: Default" is assigned upon installation)

Local SCP Configuration

Base SCP Configuration

Initiating the Base SCP

Once 4DM Personal is installed, users must turn on the Base SCP so Corridor Browser can "listen" for other DICOM workstations.

1. Launch 4DM Personal.
2. Select **Local SCP Configuration** from the **Tools** menu at the top of the Corridor Browser interface
3. In the **Local SCP Configuration** (Figure 5.1) window, verify that the SCP status is on and click **OK**

All SCPs need the type of file storage defined (e.g., database or files). The base SCP will store transferred files to the default database created at installation.

Customizing the Base SCP Configuration

- In the **Local SCP Configuration** window, customize the following fields in the Base SCP Configuration panel (Figure 5.2):
 - Station Name
 - AE Title
 - Port
 - IP

Assigning a Database to the Base SCP

- In the **Local SCP Configuration** window, select the **Data Storage** drop-down menu

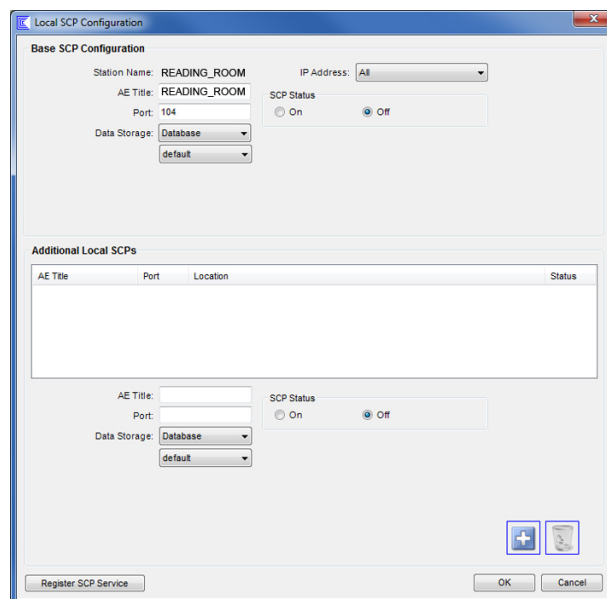


Figure 5.1: The Local SCP Configuration window

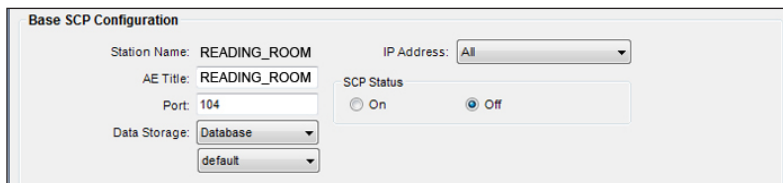


Figure 5.2: The SCP Base Configuration area is the top panel within the Local SCP Configuration window

Any changes to the Base SCP and Additional Local SCPs will cause it to automatically stop and restart. This is a “behind the scenes” action and generally takes less than 30 seconds. Any changes to an SCP should not occur during data transfers.



Users can organize files within the SCP root folder by selecting a first and second subdirectory. Data can be arranged by:



- Patient Name
- Patient ID
- Modality
- Study Date
- None

When defining a port, users should confirm that the port is not used by another network service. Consult your IT manager for assistance.



- Select **Database** (Figure 5.3)
- Select the desired database in the second drop-down menu
 - If the default database is the only available option, you can reference [Chapter 4](#) to create a new database

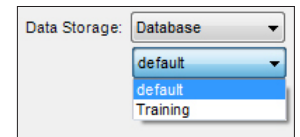


Figure 5.3: Database selection options

Assigning File Location to the Base SCP

- In the **Local SCP Configuration** window, select the Data Storage drop down menu in the Base SCP Configuration panel (top):
- Select **Files**
- The following fields are now available for edit:
 - **Root Directory (Browse):** Main location of the directory
 - **1st Subdirectory:** First level of the directory organization
 - **2nd Subdirectory:** Second level of the directory organization (Figure 5.4)

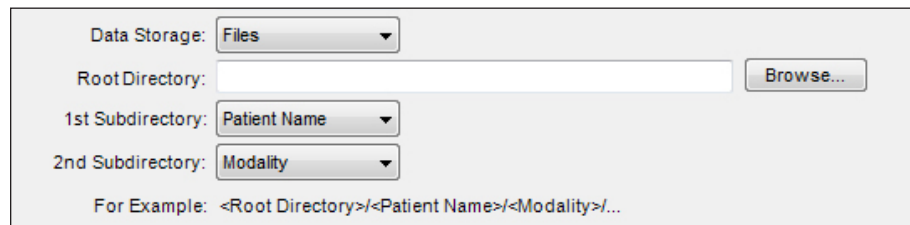


Figure 5.4: Example of the file directory structure

Additional Local SCPs

Creating Additional Local SCPs

- In the **Local SCP Configuration** window, make the following edits in the Additional Local SCPs panel (Figure 5.5):
 - Enter a unique AE Title and Port #
 - Set the Data Storage location
 - Turn SCP Status **On**
 - Click the **Add** tool (Figure 5.6)

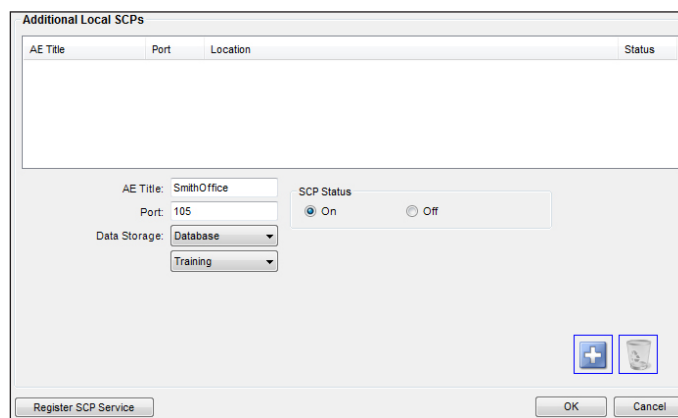


Figure 5.6: Add Tool

Figure 5.5: The Additional Local SCP area is the bottom panel within the Local SCP Configuration window.

Assigning a Database to an Additional SCP

- In the **Local SCP Configuration** window, make the following edits in the Additional Local SCPs panel:
 - For a *new* SCP, enter AE Title, Port and Turn on SCP Status (reference Creating Additional Local SCP's section above), then continue to next step
 - For an *existing* SCP, select the SCP in the list and continue to next step
- Go to the Data Storage drop down menu
- Select Database
- Select desired database in the second drop down menu
 - If the default database is the only available option, you can reference [Chapter 4](#) to create a new database
- For a *new* SCP, click the **Add** tool (Figure 5.7) and then click **OK**
- For an *existing* SCP, click the **Edit** tool (Figure 5.8) and then click **OK**



Figure 5.7:
Add Tool



Figure 5.8:
Edit Tool

Assigning File Location to an Additional SCP

- Launch 4DM Personal.
- Select Local SCP Configuration from the Tools menu
- In the **Local SCP Configuration** window, make the following edits in the Additional Local SCPs panel (bottom):
 - For a *new* SCP, enter AE Title, Port and Turn on SCP Status (reference Creating Additional Local SCP's section above), then continue to next step
 - For an *existing* SCP, select the SCP in the list and continue to next step
- Go to the Data Storage drop down menu
- Select Files
- A new window will open to set the following fields
- The following fields are now available for edit:
 - Root Directory (Browse): Main location of the directory
 - 1st Subdirectory: 1st level of the directory organization
 - 2nd Subdirectory: 2nd level of the directory organization (Figure 5.9)



Figure 5.9: Example of the file directory structure

- For a *new* SCP, click Add Local SCP and then click **OK**
- For an *existing* SCP, click Edit Local SCP and then click **OK**

SCP Services

Change the Base SCP Status

- Set the SCP Status toggle (**On** or **Off**) (Figure 5.10)
- Click **OK**

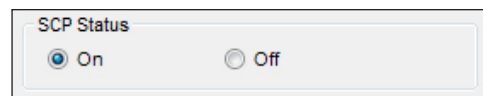


Figure 5.10: The SCP Status Toggle



When the SCP status is turned **Off**, remote DICOM work stations will not be able to transfer files to Corridor Browser.

Change an Additional SCP Status

1. Select the Additional SCP to be modified
2. Set the SCP Status Toggle (**On** or **Off**)
3. Click the **Edit** tool
4. Click **OK**

Deleting an SCP

To permanently remove a custom SCP, select it from the **Additional Local SCP** list, click the **Delete** (*Figure 5.11*) tool and then click **OK** to close the window.



Figure 5.11:
Delete Tool

Register SCP Service

For systems using the Windows Firewall (recommended), this button will register the CorridorSCP application with the firewall. By doing so, the patient browser allows outside computers to query and store images to the local SCP.

DICOM Nodes

DICOM Node Configuration

Adding a DICOM Workstation to the Sources and/or Destination Lists

- Select **DICOM Node Configuration** from the Tools menu
- In the **DICOM Node Configuration** window (*Figure 5.12*), click the **New** tool (*Figure 5.13*)
- Enter a unique **Name** in the DICOM Node Settings window (*Figure 5.14*)
- Enter the **AE Title** for the DICOM workstation to which you want to connect
- Confirm that the DICOM Port on the remote workstation is 104 (change it if necessary)
- Enter the DICOM workstation's **IP Address**
- Select the desired **Type** for the DICOM Node
 - Query: Adds the new DICOM Node to the Sources panel on the Remote tab
 - Store: Adds the new DICOM Node to the Destinations panel on the Local and Remote tabs
- Click **Test** to confirm the DICOM connection is successful
- Click **OK** to close the Test window
- If passed, click **OK** on the DICOM Node Settings and DICOM Node Configuration windows to save settings

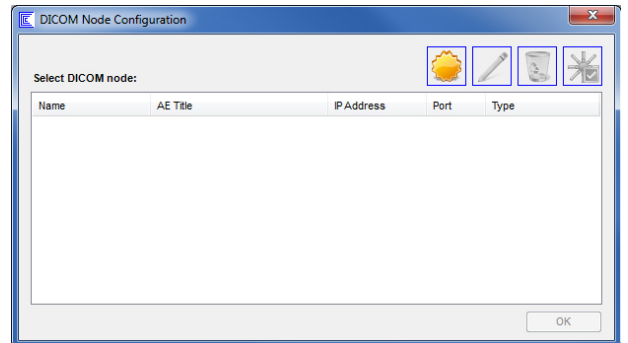


Figure 5.12: DICOM Node Configuration window



Figure 5.13:
New Tool

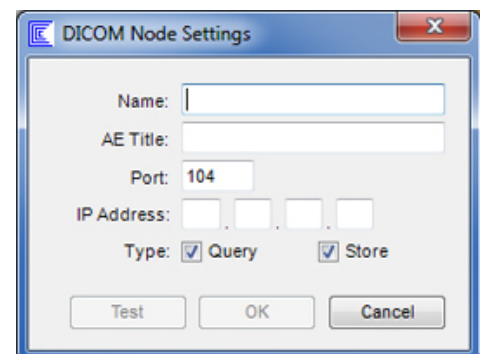





Figure 5.14: DICOM Node Settings

 Users cannot delete the Base SCP; it can only be deactivated (turned off).

 The **Name** field identifies the remote DICOM node within Corridor Browser. Use a unique name associated with that system (e.g. Camera Room One).

WARNING

Remote DICOM workstations will need to be configured to recognize Corridor Browser SCPs. Refer to the workstation user's manual or contact a service representative for assistance.

 Information necessary to complete this step includes AE Title, Port #, and IP address for each workstation.

For more information on remote workstation configuration, visit www.inviasolutions.com

Editing a Previously Added DICOM Node

- Click the desired DICOM node from the DICOM Node Configuration window (*Figure 5.15*)
- Click the **Edit** tool.
- Make the necessary changes on the **DICOM Node Settings** window
- Click the **Test** tool to confirm the DICOM connection is successful
- Click **OK** to close the Test window
- If passed, click **OK** on the DICOM Node Settings and DICOM Node Configuration windows to save settings

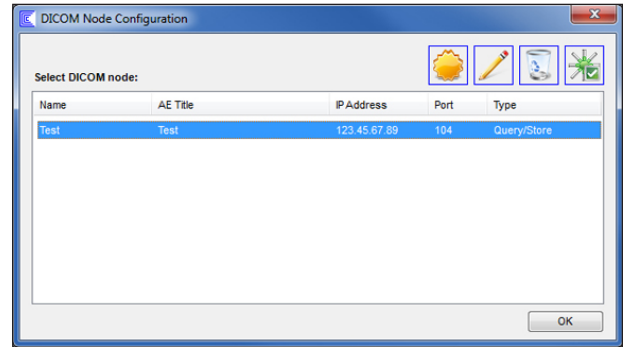


Figure 5.15: Create, edit, delete, and test DICOM Nodes

Deleting a Previously Added DICOM Node

- Select DICOM Node Configuration from the Tools menu
- Click the desired DICOM node
- Click the **Delete** tool then **OK** to close the window

Auto Import Configuration

The the patient browser will enable the user to import a specific image file type (i.e. DICOM, Pegasys, ECAT) from a Windows directory folder automatically into the local DICOM SCP data storage location. The files are deleted from the Windows directory folder after the transfer has completed.

How to Configure

1. Select **Auto Import** from the **Tools** menu found on the top Menu Bar.
2. Click **Browse** to navigate and select the Windows directory folder.
3. Select the **Data Format** for incoming image file types.
 - **DICOM** – If selected, only DICOM files are read and pushed to the SCP.
 - **Pegasys** – This selection will only read and convert Pegasys formatted image files. If selected prior to sending to the SCP, the files are converted from Pegasys format to INVIA DICOM format.
 - **ECAT** – This selection will only read and convert ECAT 7 formatted image files. If selected prior to sending to the SCP, the files are converted from ECAT format to INVIA DICOM format.
4. Select the **Data Destination** then **Add**.

The user can remove a Windows directory folder from the Auto Import directory list by clicking **Delete**.

Troubleshooting Auto-Import

During the conversion process, a “Pending” folder will be generated within the Auto Import specified directory folder as a temporary placeholder for files awaiting conversion.

If the conversion process fails, then a “Failed” folder will be created within the Auto Import specified directory folder containing the files that failed the conversion process.

If the user is trying to configure an auto import rule and there are not any options displayed in the data destination drop down menu, the user will need to turn “on” the Local Base SCP Configuration.

Troubleshooting

Within the the patient browser’s Help menu, users can review a record of DICOM activity. The following logs are available:

- **Event Viewer:** Records all events and actions for all instances of the patient browser that are running. This information is used to track potential errors in the operation of the application which is useful for INVIA to troubleshoot problems with the application.
 - Select **Event Viewer** from the **Help** menu
 - Once the **Event Viewer** is open, select **INVIA** from the list to view log entries
 - To save the INVIA log to aide in advanced troubleshooting
 - Right-click on **INVIA**
 - Select **Save Log File As...**
- **4DM Personal’s Log Viewer:** Provides a real time display of all actions and events executed by the currently active patient browser. When a problem has occurred with the application, this tool can help record the specific steps. This tool will be used by INVIA to troubleshoot problems with the patient browser.

Only one file type can be configured per directory.



Different image file formats need to be sent to separate Windows directory folders.

CHAPTER 6 DATA MANAGEMENT

File Management

4DM Personal's Patient Browser is designed to provide an interface for DICOM file management. This section will provide examples of file retrieval and transfer from a variety of sources.

Local to Local

Follow this tutorial to transfer DICOM files from **local** sources (folders or databases) to **local** destinations (folders or databases). Refer to [Chapter 2](#) for help creating **local** sources and destinations.

- 1 Within the **Local** tab, click the desired **Source** so it is selected (e.g., C:\Users\Public\Documents\INVIA\Corridor4DM\SampleData)
- 2 Click the **Refresh** tool in the **Patient List Panel** to display a list of patient files
- 3 Select files for transfer
- 4 Click the desired **Local Destination** so it is selected
- 5 Select the **Copy To** tool
- 6 Reference the **Job Queue Manager** in the **Status Bar** to confirm data transfer is complete

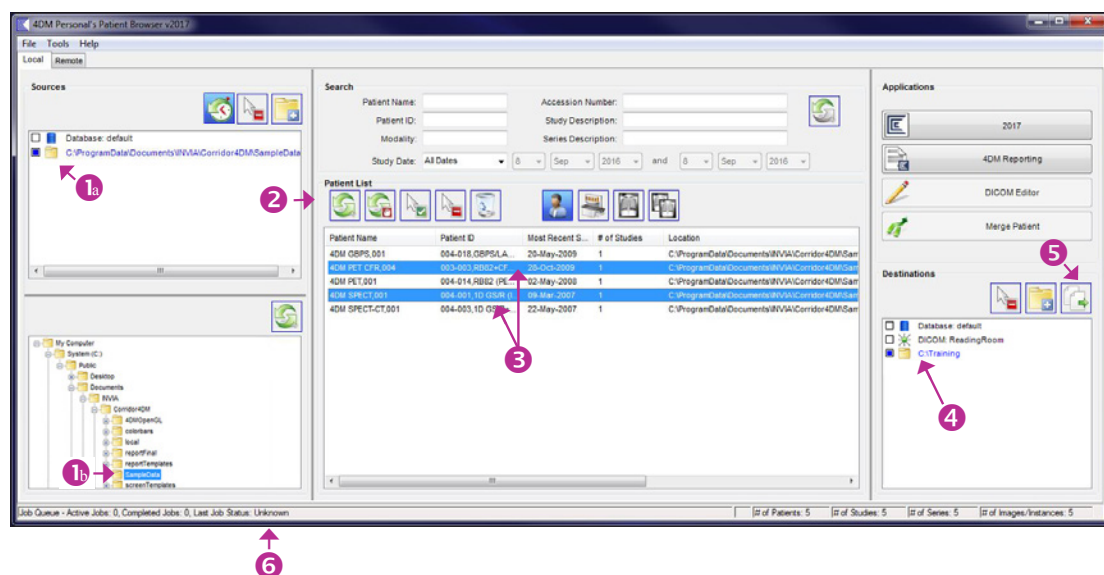


Figure 6.1: Local to Local Data Transfers

Local to DICOM (Remote)

Follow this tutorial to transfer DICOM files from **local** sources to **remote** destinations. Refer to [Chapter 2](#) for help creating **local** sources and [Chapter 5](#) for help creating **remote** DICOM workstations.

- 1 Within the **Local** tab, click the desired **Source** so it is selected (e.g., C:\Users\Public\Documents\INVIA\Corridor4DM\SampleData)
- 2 Click the **Refresh** tool in the Patient List Panel to display a list of patient files
- 3 Select files for transfer
- 4 Click the desired DICOM (Remote) Destination so it is selected
- 5 Select the **Copy To** tool
- 6 Reference the **Job Queue Manager** in the **Status Bar** to confirm data transfer is complete

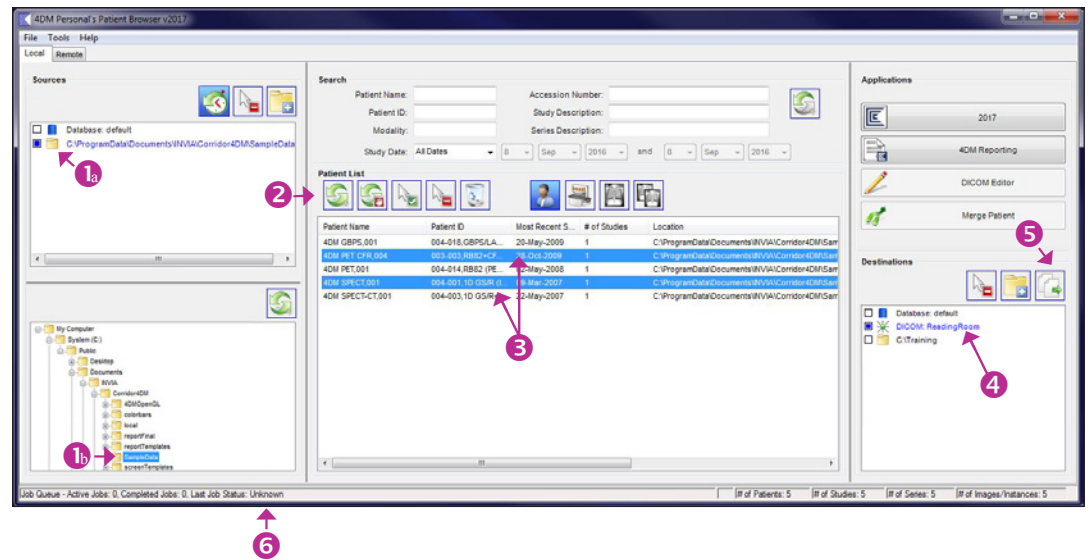


Figure 6.2: Local to DICOM (Remote) Data Transfers

In order to transfer data from a remote workstation to your PC, you'll need to start the default SCP service. Refer to Chapter 5 for step-by-step instructions.



During installation, the patient browser names the Base SCP with the same name already assigned to your computer.



DICOM (Remote) to Local

Follow this tutorial to transfer DICOM files from **remote** sources to your PC. Refer to [Chapter 5](#) for help creating Remote DICOM sources and destinations and [Chapter 5](#) for help creating additional **Local** sources and destinations.

- 1 Click the **Remote** tab
- 2 Select the desired DICOM Source (e.g., DICOM: InterestingCases)
- 3 Once the data source is selected, click the **Refresh** tool in the Patient List Panel to display a list of patient files
- 4 Select files for transfer
- 5 Select the DICOM Destination labeled with your AE Title (e.g., DICOM:ReadingRoom).
- 6 Select the **Copy To** tool
- 7 Reference the **Job Queue Manager** in the **Status Bar** to confirm data transfer is complete

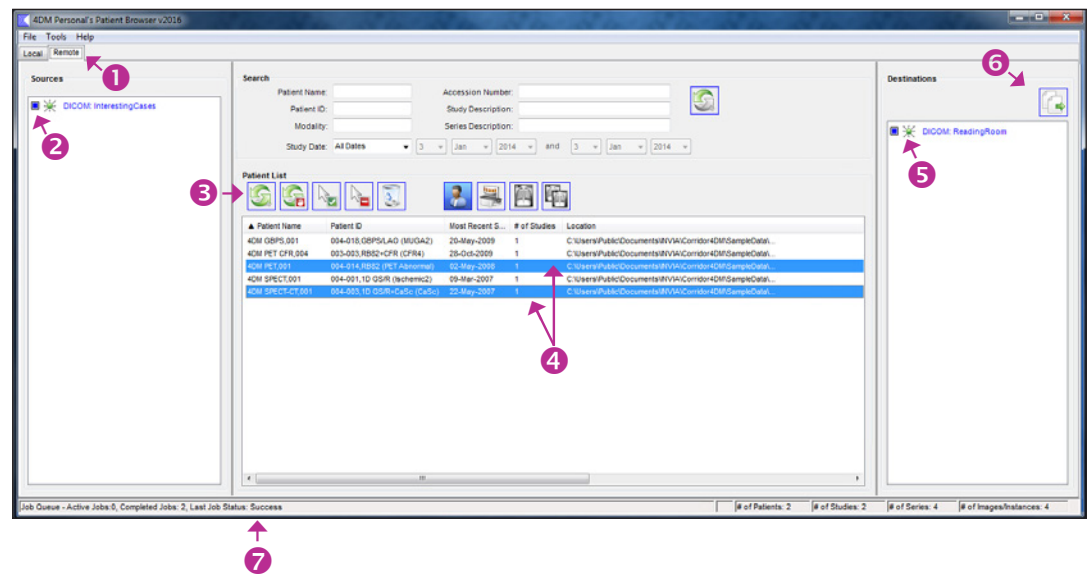


Figure 6.3: DICOM (Remote) to Local Data Transfers

DICOM (Remote) to DICOM (Remote)

Follow this tutorial to transfer DICOM files from **remote** DICOM sources to another **remote** DICOM destinations. Refer to [Chapter 5](#) for help creating **remote** DICOM sources and workstations.

- 1 Click the **Remote** tab
- 2 Select the desired DICOM Source (e.g., DICOM: InterestingCases)
- 3 Once the data source is selected, click the **Refresh** tool in the Patient List Panel to display a list of patient files
- 4 Select files for transfer
- 5 Select the DICOM Destination (e.g., DICOM: Clinic).
- 6 Select the **Copy To** tool
- 7 Reference the **Job Queue Manager** in the **Status Bar** to confirm data transfer is complete

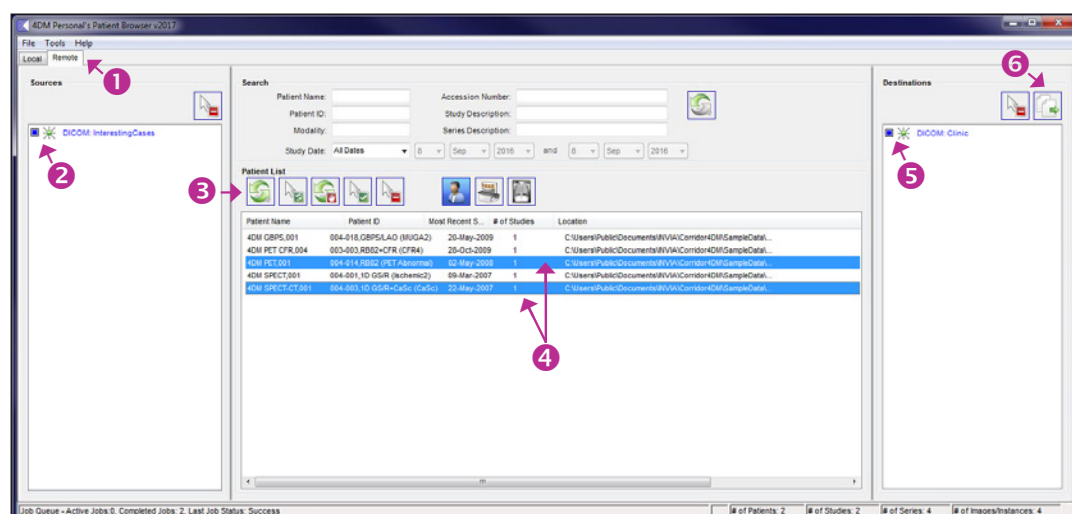


Figure 6.4: DICOM (Remote) to DICOM (Remote) Data Transfers

Preferences

4DM Personal's Patient Browser provides the ability to Backup, Restore, and configure Options within Preferences. To access these settings, click Tools and select Preferences ([Figure 5.5](#)) to open the patient browser's Preferences window.

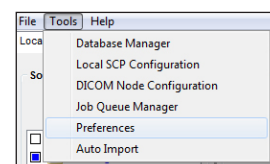


Figure 6.5: Select Preferences

Backup

The **Backup** tab ([Figure 5.6](#)) enables the user to define a **Backup Directory** location and specify which options to select under **Backup Global Settings/Directories** and the **Backup Format** when performing patient browser's Preference Backup. This should be performed after the initial setup of the patient browser.

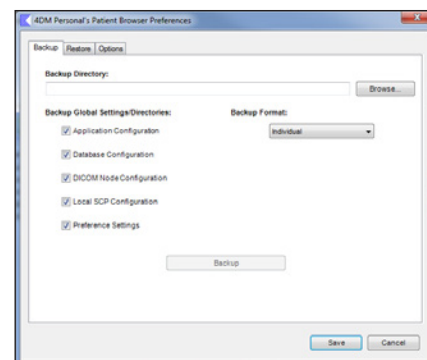


Figure 6.6: Patient Browser's Preferences - Backup

Restore

The **Restore** tab (Figure 5.7) enables the user to specify the directory location of the patient browser's Preference Backup using the **Restore Directory**. Under **Restore Global Settings/Directories**, the user selects from available options contained in the patient browser's Preference Backup to restore the patient browser settings.

Options

The **Options** tab (Figure 5.8) provides settings for **Audit Logging** to track user activity within the patient browser, **Language Settings** if the user wants to set a language different from the Windows OS, **Patient List Display Settings** if the user wants to change the default display level, and **DICOMDIR** support for exporting datasets with a DICOMDIR included.

Audit Logging

This feature enables the ability to track access and changes to patient files by turning the option on or off. When activated, the patient browser records:

- Windows User Name
- Date and time of action
- What the action was:
 - » **Querying patient files**: records the source file location of the patient and any search parameters used to locate the patient file
 - » **Copying of a patient file to a new location**: records the Patient Name, ID, Source, and Destination that the patient file was copied to
 - » **Launching a patient file**: records the Patient Name, ID, and Application that the patient was launched into (e.g., 4DM or 4DM Reporting)
- Security tag to allow detection of log file tampering

Within the Audit Logging section of the Options window, the user has the ability to specify the **Audit Log Location** to retrieve the log files. To retrieve or access a log, navigate out to the directory location and open the XML log file. You can choose to open the file in Excel, Word, Notepad, or any other application that reads XML.

Logs are saved with dates and times in the filenames so you can easily locate a specific log. Sequential sessions of 4DM are logged in the same file, until that file reaches the maximum file size as defined by the Administrator.

Within the Options window, the user can also:

1. Define **Maximum Log File Size**: The amount of disk space each audit log will occupy prior to creating a new log.
2. **Backup**: The user can backup audit logs to a secondary location. Clicking **Backup** opens a window where the user can choose a location to automatically store backup log files.
3. **Validate**: Clicking **Validate** opens a **Validation Report** which verifies that no manual edits have made to the log file. Note that only Admin Users have read/write access for the log file.

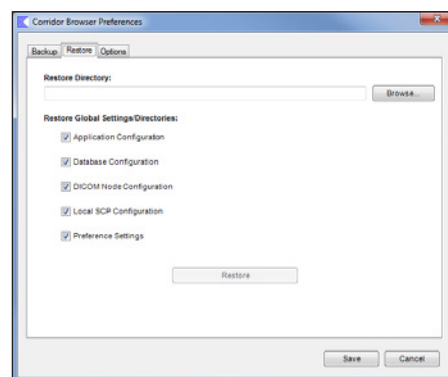


Figure 6.7: Patient Browser's Preferences - Restore

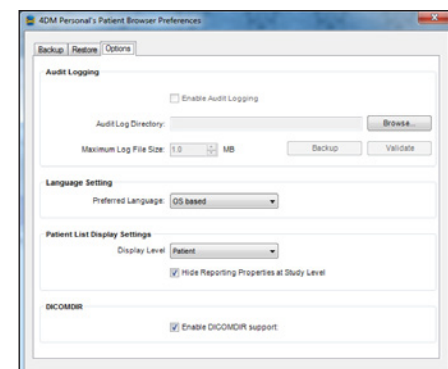









Figure 6.8: Patient Browser's Preferences - Options

Symbols

	MANUFACTURER
	DATE OF MANUFACTURE
	CATALOGUE NUMBER
	CONSULT INSTRUCTIONS FOR USE
	EUROPEAN CONFORMITY: CE MARK
	AUTHORISED REPRESENTATIVE IN THE EUROPEAN COMMUNITY
 (01)00864974000233 (10)2017	UNIQUE DEVICE IDENTIFIER (UDI) FOR V2017



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INVia, LLC.

3025 Boardwalk Street, Suite 200
Ann Arbor, MI 48108
USA
Tel: (734) 205-1231
Fax: (734) 205-1537



EMERGO EUROPE

Prinsessegracht 20
2514 AP The Hague
The Netherlands

AUSTRALIAN SPONSOR

EMERGO ASIA PACIFIC PTY LTD.
Level 20, Tower II Darling Park
201 Sussex Street
Sydney, NSW 2000
Australia
Tel: + 61 (0)2 9006 1662
Fax: + 61 (0)2 9006 1010