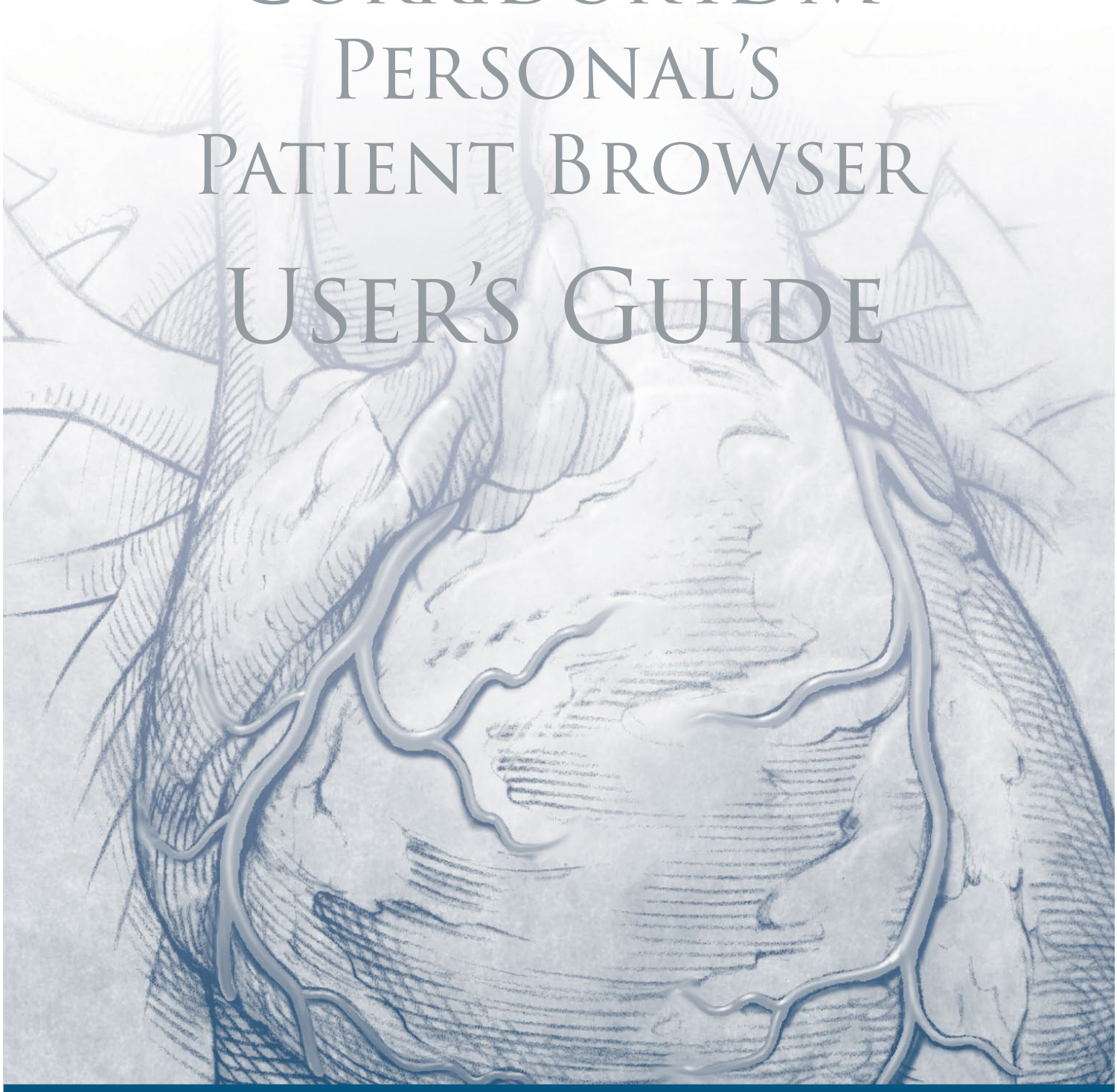
4DM

Corridor4DM Personal's Patient Browser

User's Guide



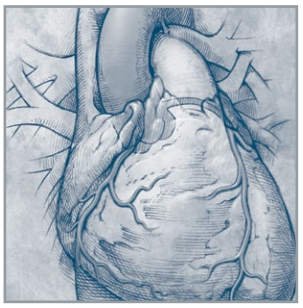
INVIA Medical Imaging Solutions

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

Chapter 1 Getting Started

Chapter Overview

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.
- 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 Guide 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)[1] Windows 8 (64 bit)[1] Windows 10 (64 bit) Windows 11 (64 bit)	Windows Server 2008 R2[1] Windows Server 2012 R2[1] Windows Server 2016 Windows Server 2019 Windows Server 2022
Processor:	Speed: 2.0 GHz or greater Cores: 4 (minimum), 8 (recommended)	
Memory:	8 GB (minimum) 16 GB or more (recommended)	
Disk Storage:	512GB or larger NVME hard drive (recommended) NOTE: 2GB is required to install application.	
Video Card:	256 MB of on board Video Memory (minimum), 1 GB (recommended). 3D graphic card supporting OpenGL 3.0 (minimum) or greater (4.1 recommended)	
Monitor:	Up to four HD (1920x1080) monitor(s)	

[1] These operating systems are not recommended as they are at or nearing end of life.

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 4DM 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, select **4DM Licensing** from the INVIA tab in your program list in the Start 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 using the folder icon. Once the **Check Status** icon 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.

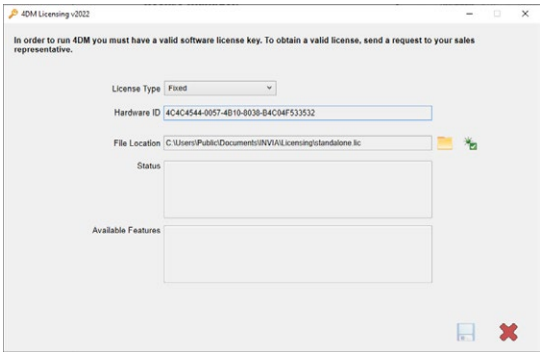


Figure 1.1: *The Licensing window - Fixed License*

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.

Floating License Model *(Figure 1.2)*

1. Users can choose between the **IP address** and the **Hostname** to connect to the server/workstation where the 4DM license manager is installed.
2. **IP Address/Hostname** and **Port:** Users enter the **IP Address** or **Hostname** for the license manager. Select the **Check Status** icon to verify the connection to the license manager.

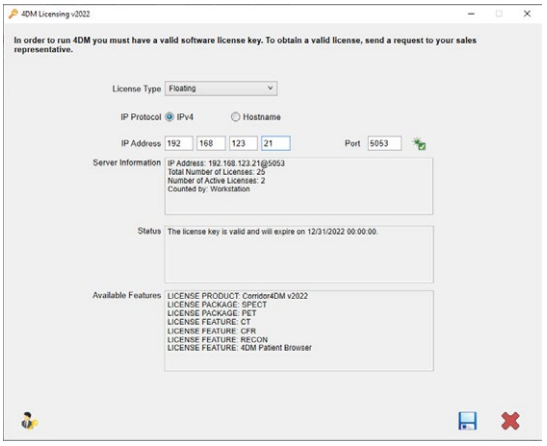


Figure 1.2: *The Licensing window - Floating License*

3. **Server Information:** Displays the active license manager address or hostname, the total number of licenses on the license manager, and the number of licenses in use.
4. **Status:** Displays any messages regarding the validation of the license key file.
5. **Available Features:** Lists the features defined by the license key.

Floating License with Backup Model *(Figure 1.3)*

1. **IP Protocol:** Users can choose between the **IP address** and the **Hostname** to connect to the server/workstation where the 4DM license manager is installed.
2. **Primary IP Address/Hostname and Port:** Users enter the **IP Address** or **Hostname** for the license manager. Select the **Check Status** icon to verify the connection to the license manager.
3. **Backup Server IP Address/Hostname and Port:** User enters the **IP Address** or **Hostname** and **Port** number for the license manager that is designated as the backup server. Select the **Check Status** icon to verify connection to the backup license manager.

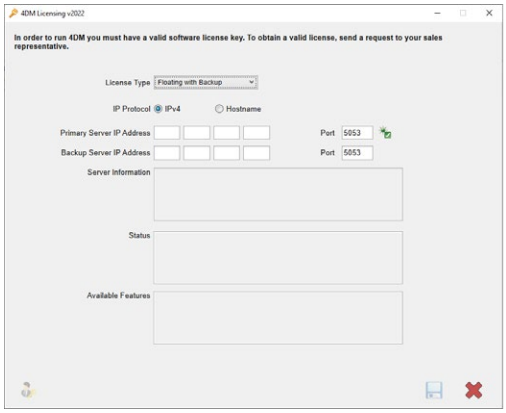


Figure 1.3: *The Licensing window - Floating License with Backup*

4. **Server Information**: Displays the active license manager address or hostname, the total number of licenses on the license manager, and the number of licenses in use
5. **Status:** Displays any messages regarding the validation of the license key file.
6. **Available Features:** Lists the features defined by the license key.

Chapter 2 Navigating the Patient Browser

For help retrieving files from remote DICOM nodes, go to Chapter 4: 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, make edits to DICOM attributes, merge patient files, or copy files to local or remote destinations.

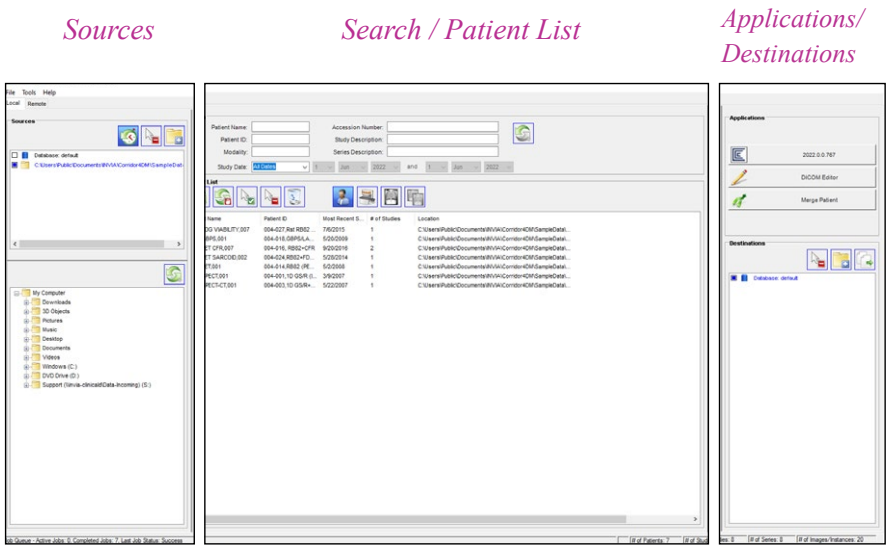


Figure 2.1: *The patient browser screen contains File, Tools, and Help menus, and three areas for user interaction: Sources, Search / Patient List, and Applications / Destinations*

Menu Bar

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

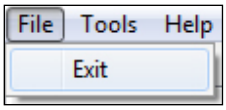


Figure 2.2: *File Menu*

File (*Figure 2.2*)

- **Exit:** Exits the patient browser

Tools (*Figure 2.3*)

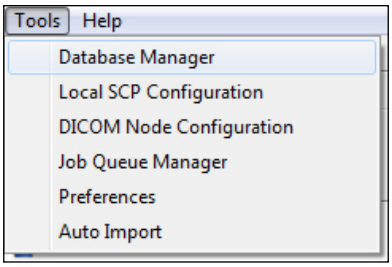


Figure 2.3: *Tools Menu*

- **Database Manager:** Described in Chapter 3
- **Local SCP Configuration:** Described in Chapter 4
- **DICOM Node Configuration:** Described in Chapter 4
- **Job Queue Manager:** Described in Chapter 2
- **Preferences:** Described in Chapter 5
- **Auto Import:** Described in Chapter 4

Help options (*Figure 2.4*)

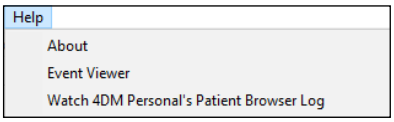


Figure 2.4: *Tools Menu*

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

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*).

To Select Local Data Sources

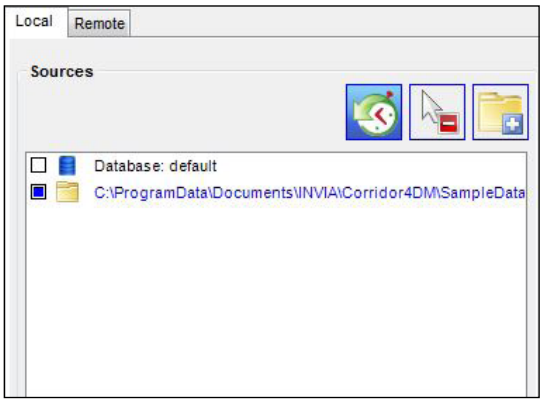


Figure 2.5: *This area displays shortcuts to local folders.*

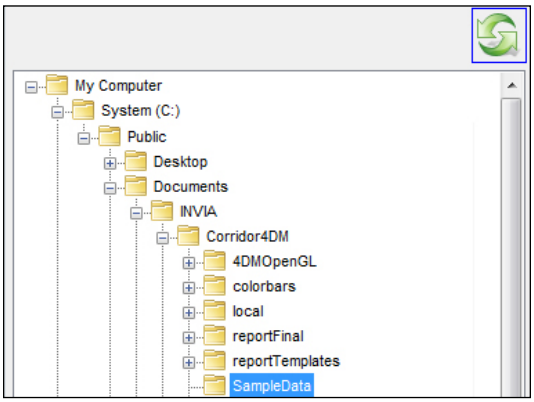


Figure 2.6: *An example of the folder directory panel.*

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

- Click on the desired database or directory (*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*

- 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.

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

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**.

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

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.

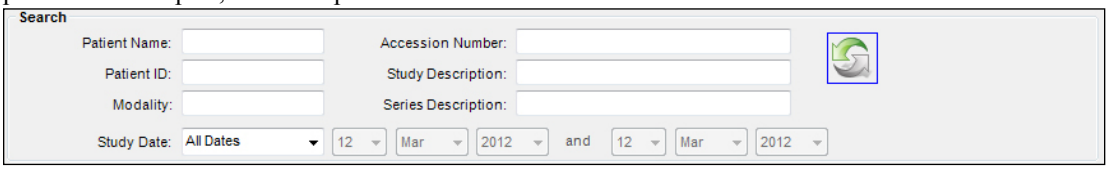


Figure 2.10: *The Search panel in its default state*

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.)

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.

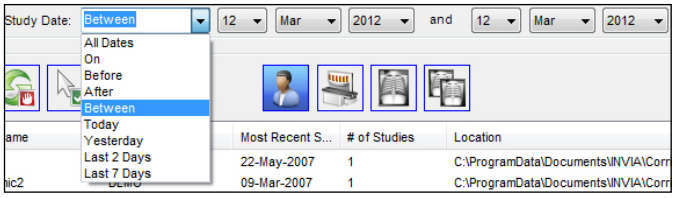


Figure 2.11: *The Study Date area includes a drop-down menu of the various parameters for a Study Date search and drop-down menus for day, month, and year.*

- **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*).

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

▲ 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*):

Figure 2.14: *User Control tools*

- **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 2.15: *File View tools*

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.

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.

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.

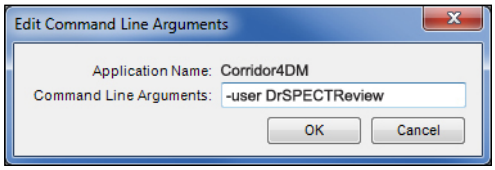


Figure 2.17: *Right-click to access the Command Line Window*

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.

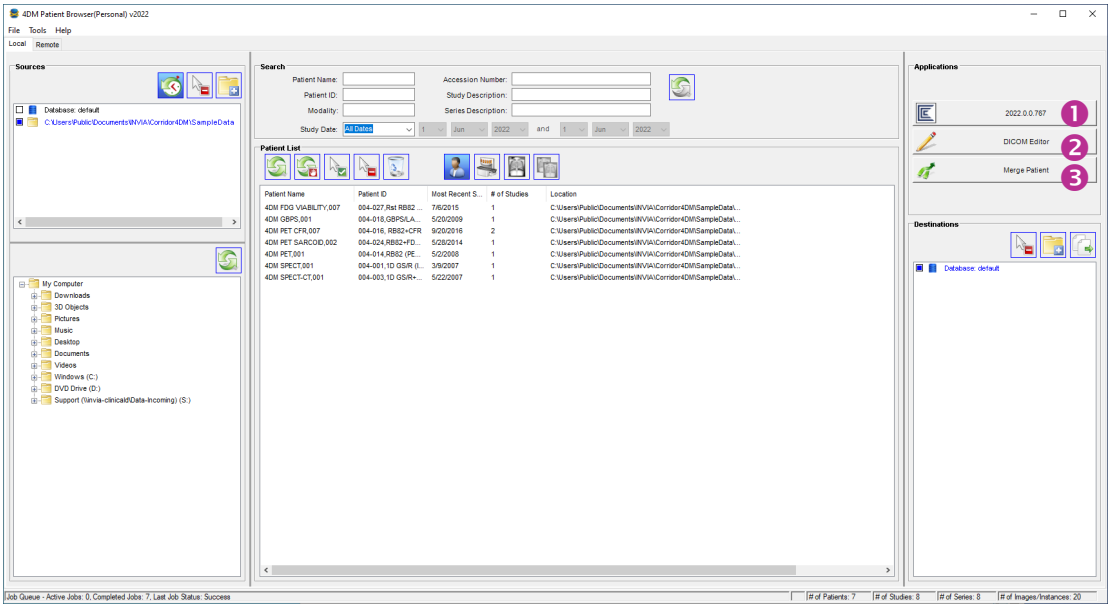


Figure 2.16: *Select files to open in the browser window*

DICOM Editor

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

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.

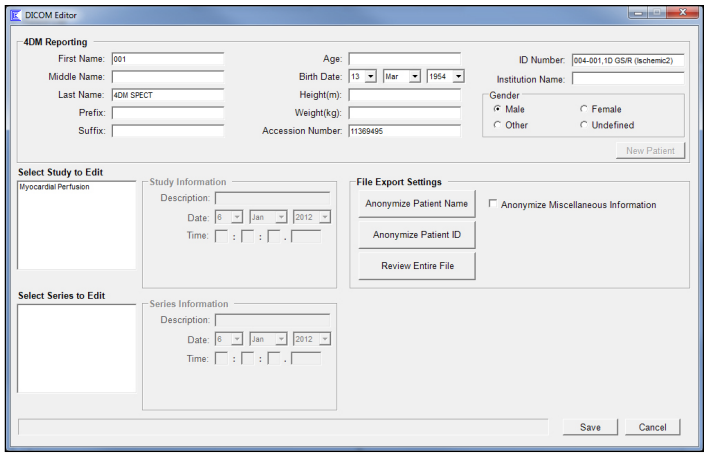


Figure 2.18: *DICOM Editor*

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)

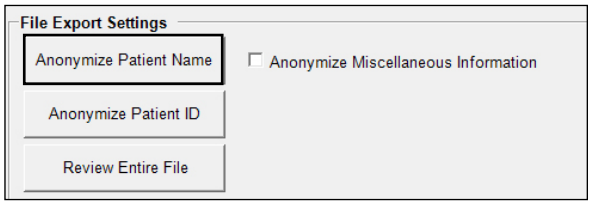


Figure 2.19: *DICOM Editor - Anonymize Patient Name*

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)

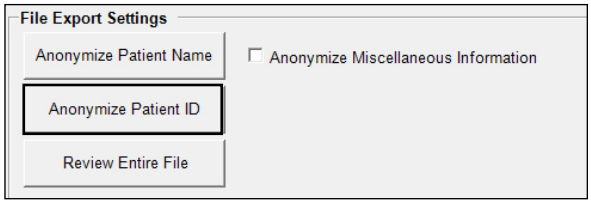


Figure 2.20: *DICOM Editor - Anonymize Patient ID*

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.

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

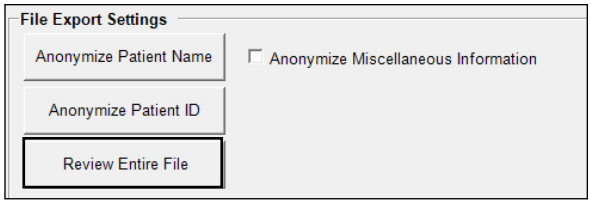


Figure 2.21: *DICOM Editor - Review Entire File*

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

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.

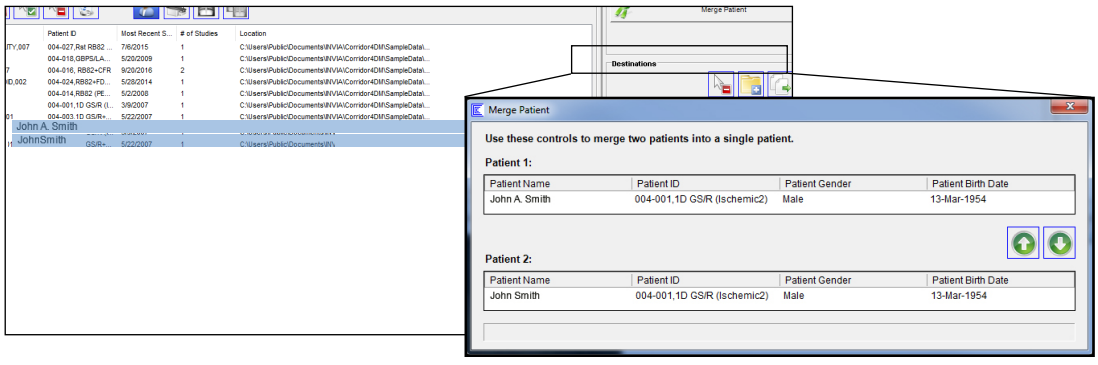


Figure 2.22: *Merge Patient tool*

During the merge, any **DICOM datasets** from the other patient is added to the 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)*

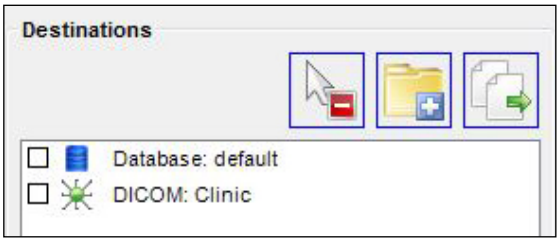


Figure 2.23: *Destination Panel*

To copy patients to a DICOM node:

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

Figure 2.24: *Copy To tool*

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**

Figure 2.25: *Add Local tool*

- The new directory path will appear in the Destinations panel
  - Select specific patient files
  - Select the target directory
- Click once on **Copy To** 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):*

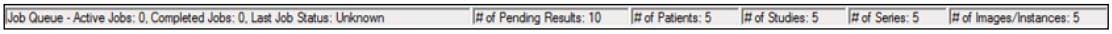


Figure 2.26: *Status Bar*

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

- **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.

  - **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 Database Management

Database Manager

The **Database Manager** window (*Figure 3.1*) is accessible from the **Tools** menu and permits the user to add and delete databases as well as manage database files.

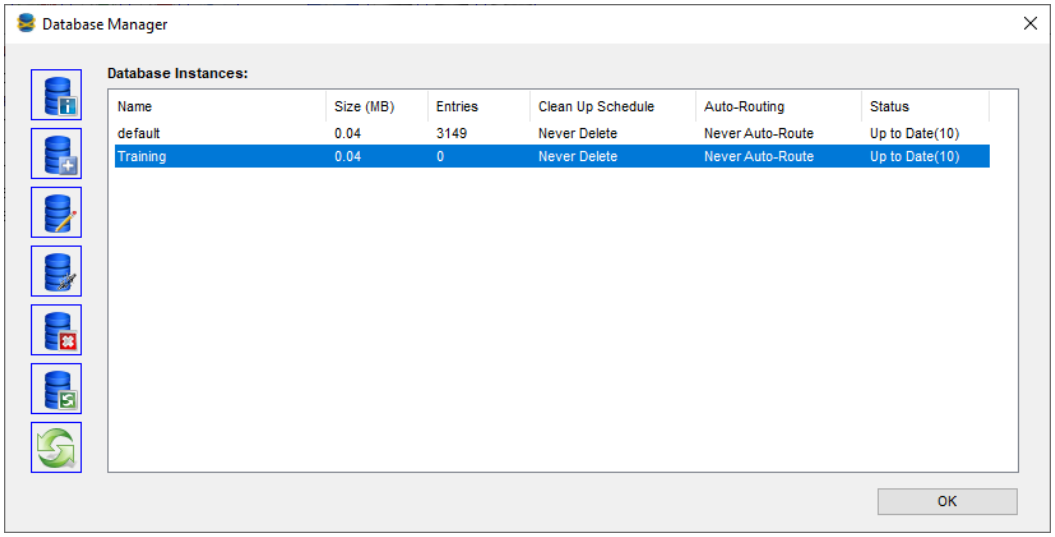


Figure 3.1: *Creating a new data storage location using the Database Manager*

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 3.2)* 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 3.3)*:

Figure 3.2: *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 which 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 3.3: *Database Information Window Tools*

If All Studies Older Than a certain number of days are 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 3.4)* Creates or links a database and adds it to the Sources and Destination panels.
- **Rename Database:** *(Figure 3.5)* Edit the selected database name.
- **Unlink Database:** *(Figure 3.6)* 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 3.7)* 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.
- **Update Database**: *(Figure 3.8)* Updates the selected database
- **Refresh:** *(Figure 3.9)* Updates the current list of the database tables.

Figure 3.4: *Add/ Link Database Tool*

Figure 3.5: *Rename Database Tool*

Figure 3.6: *Unlink Database Tool*

Figure 3.7: *Delete Database Tool*

Figure 3.8: *Update Database Tool*

Figure 3.9: *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 ❶ *Figure 3.10*)
4. File 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

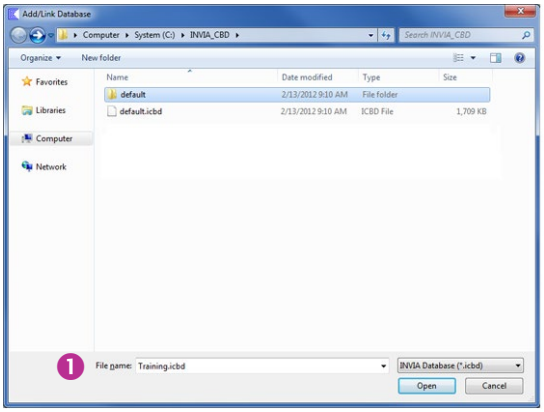


Figure 3.10: *Creating a new database in the patient browser*

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. File 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

Chapter 4 DICOM Configuration

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.

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 4.1*) 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.

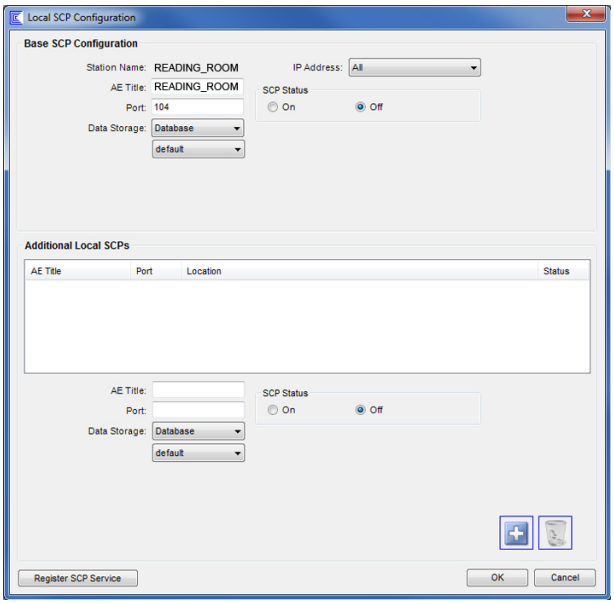


Figure 4.1: *The Local SCP Configuration window*

Customizing the Base SCP Configuration

- In the **Local SCP Configuration** window, customize the following fields in the Base SCP Configuration panel (*Figure 4.2*):
  - Station Name
  - AE Title
  - Port
  - IP

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.

Assigning a Database to the Base SCP

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

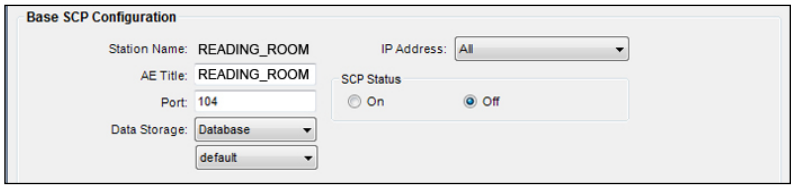


Figure 4.2: *The SCP Base Configuration area is the top panel within the Local SCP Configuration window*

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

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.

- Select **Database** (*Figure 4.3*)
- Select the desired database in the second drop-down menu
  - If the default database is the only available option, you can reference Chapter 3 to create a new database

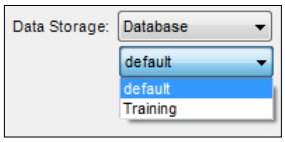


Figure 4.3: *Database selection options*

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 4.4*)

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

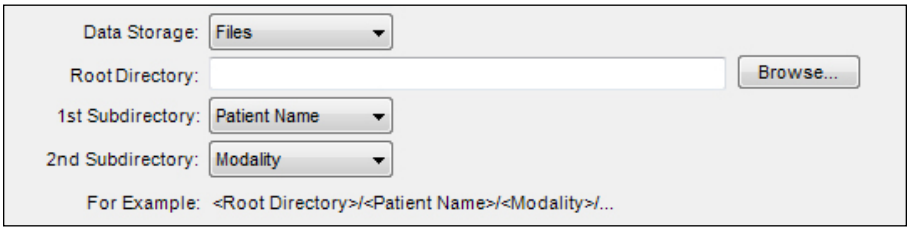


Figure 4.4: *Example of the file directory structure*

Additional Local SCPs

Creating Additional Local SCPs

- In the **Local SCP Configuration** window, make the following edits in the Additional Local SCPs panel (*Figure 4.5*):
  - Enter a unique AE Title and Port #
  - Set the Data Storage location
  - Turn SCP Status **On**
  - Click the **Add** tool (*Figure 4.6*)

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

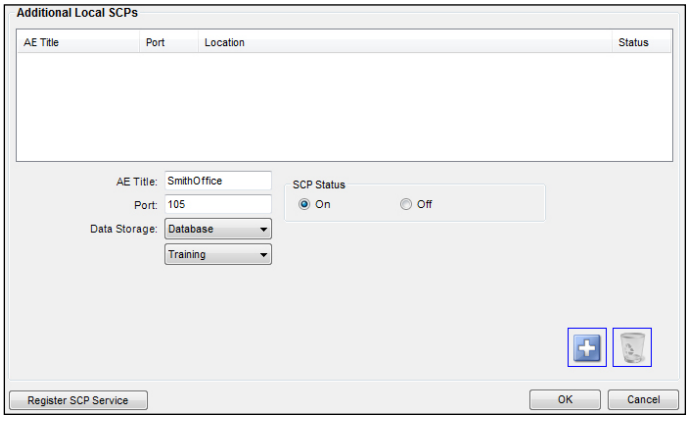


Figure 4.6: *Add Tool*

Figure 4.5: *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 3 to create a new database
- For a *new* SCP, click the **Add** tool (*Figure 4.7*) and then click **OK**
- For an *existing* SCP, click the **Edit** tool (*Figure 4.8*) and then click **OK**

Figure 4.7: *Add Tool*

Figure 4.8: *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 4.9*)

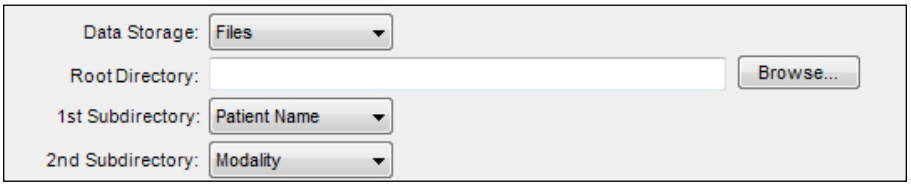


Figure 4.9: *Example of the file directory structure*

- 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 4.10*)
- Click **OK**

Figure 4.10: *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

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

To permanently remove a custom SCP, select it from the **Additional Local SCP** list, click the **Delete** (*Figure 4.11*) tool and then click **OK** to close the window.

Figure 4.11: *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

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

- Select **DICOM Node Configuration** from the Tools menu
- In the **DICOM Node Configuration** window (*Figure 4.12*), click the **New** tool (*Figure 4.13*)
- Enter a unique **Name** in the DICOM Node Settings window (*Figure 4.14*)
- Enter the **AE Title** for the DICOM workstation to which you want to connect

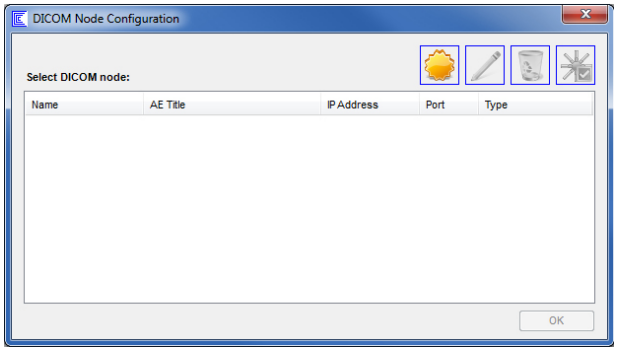


Figure 4.12: *DICOM Node Configuration window*

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

- 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 4.13: *New Tool*

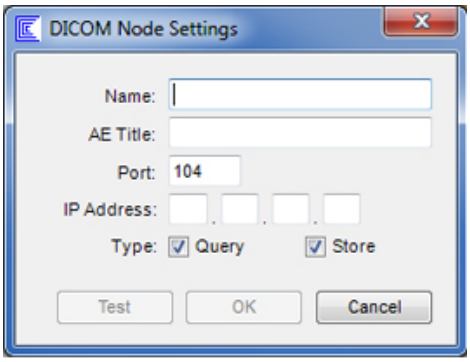


Figure 4.14: *DICOM Node Settings*

Editing a Previously Added DICOM Node

- Click the desired DICOM node from the DICOM Node Configuration window (*Figure 4.15*)
- 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

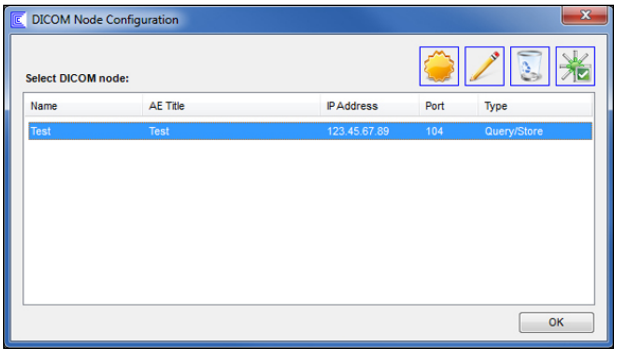


Figure 4.15: *Create, edit, delete, and test DICOM Nodes*

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 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 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 5 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

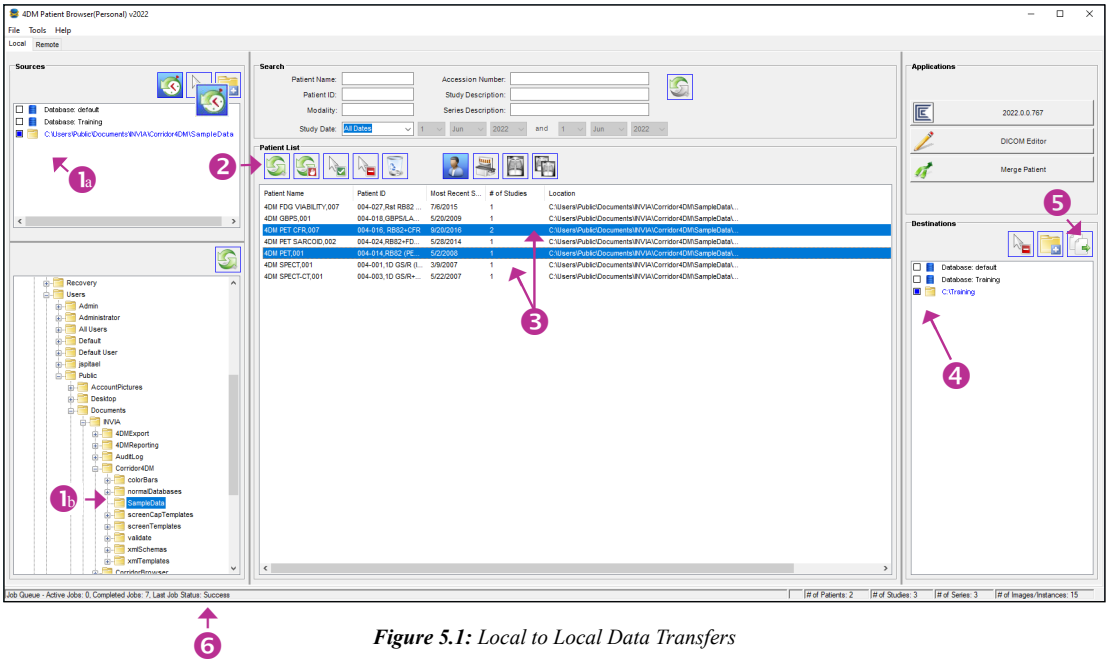


Figure 5.1: *Local to Local Data Transfers*

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 4 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

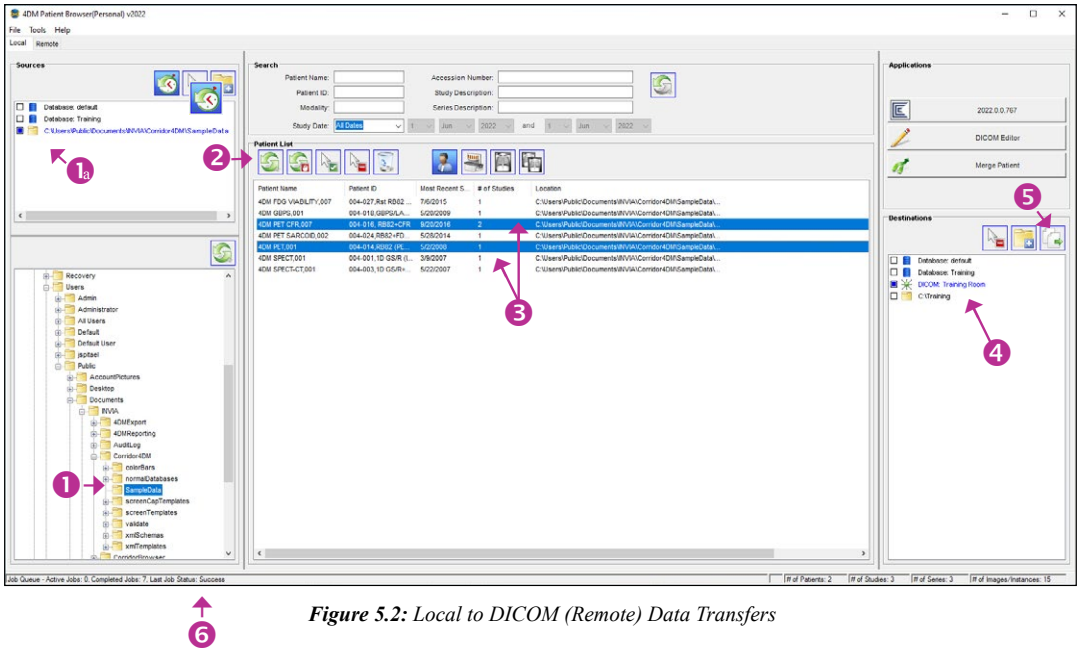


Figure 5.2: *Local to DICOM (Remote) Data Transfers*

In order to transfer data from a remote workstation to your PC, you will 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 4 for help creating Remote DICOM sources and destinations and Chapter 4 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). This will send the data to the location defined in the Local SCP Configuration
6. Select the **Copy To** tool
7. Reference the **Job Queue Manager** in the **Status Bar** to confirm data transfer is complete

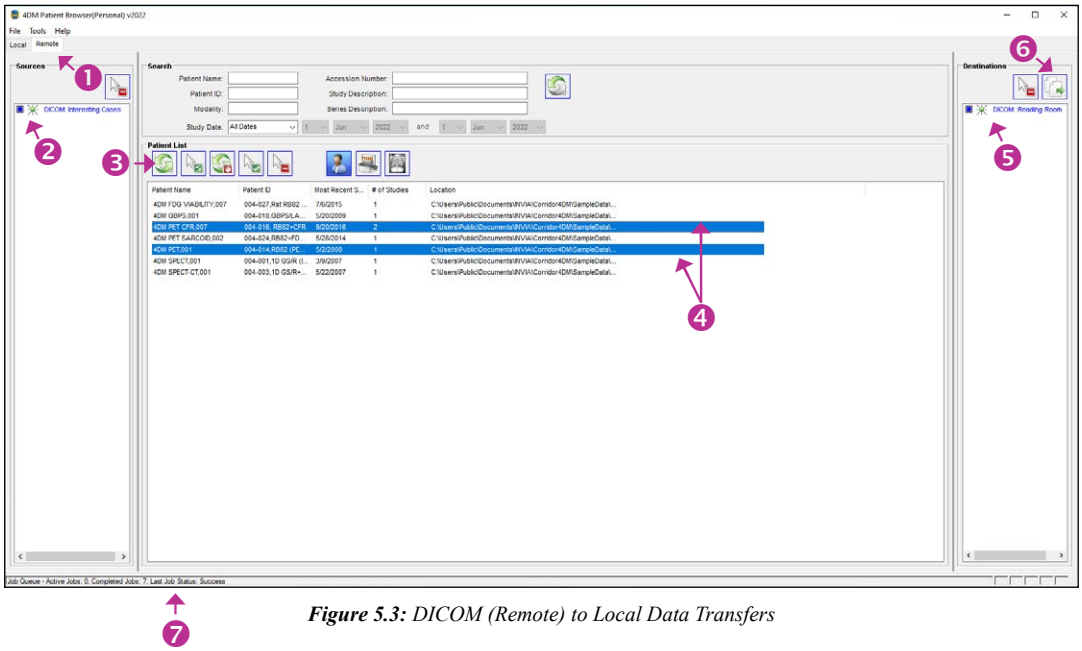


Figure 5.3: *DICOM (Remote) to Local Data Transfers*

DICOM (Remote) to DICOM (Remote)

Follow this tutorial to transfer DICOM files from **remote** DICOM sources to another **remote** DICOM destination. Refer to Chapter 4 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

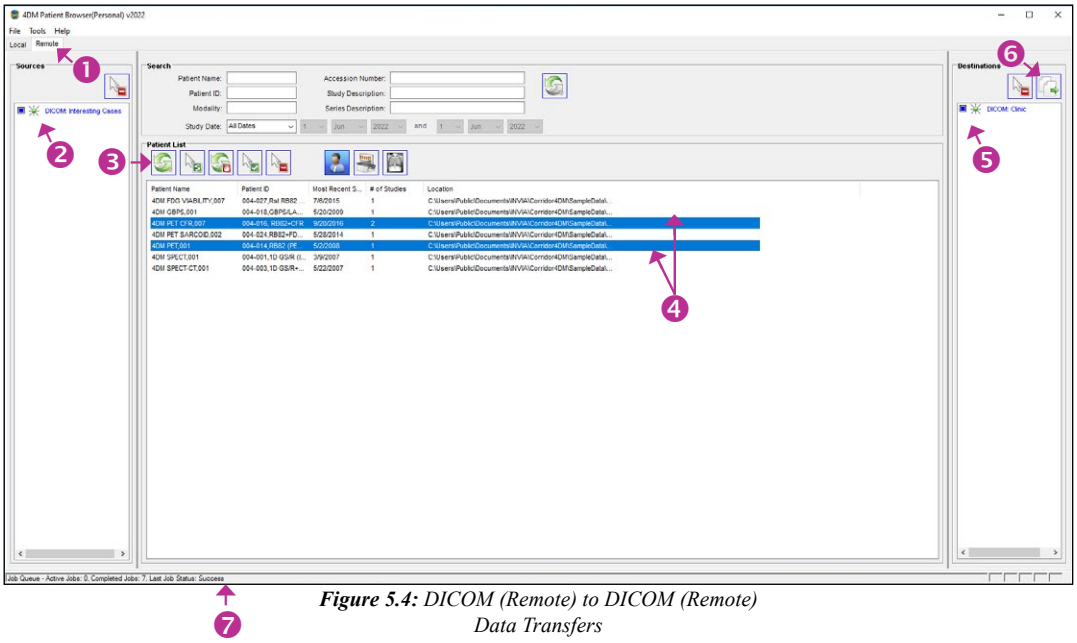


Figure 5.4: *DICOM (Remote) to DICOM (Remote) Data Transfers*

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.

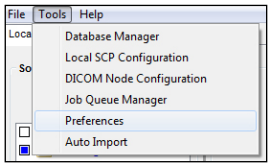


Figure 5.5: *Select Preferences*

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.

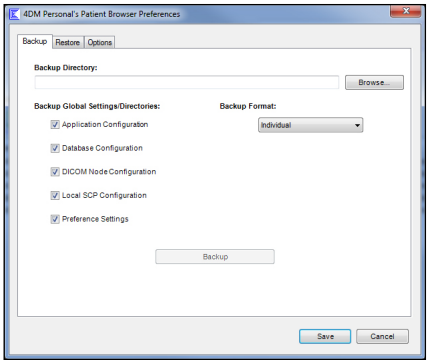


Figure 5.6: *Patient Browser's Preferences - Backup*

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.

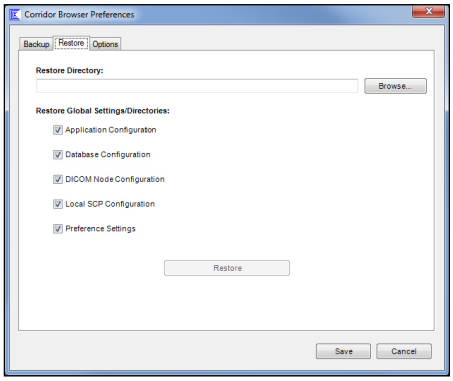


Figure 5.7: *Patient Browser's Preferences - Restore*

Options

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

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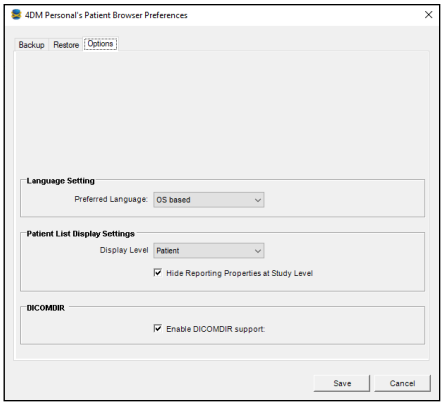

Figure 5.8: *Patient Browser's Preferences - Options*

Symbols

	**MANUFACTURER**
	**DATE OF MANUFACTURE**
	**CATALOGUE NUMBER**
	**CONSULT INSTRUCTIONS FOR USE**
 (01)00864974000257(10)2023	**UNIQUE DEVICE IDENTIFIER (UDI)**
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